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THE RELATIONSHIP BETWEEN THE LENGTH AND THE RELIABILITY OF A TEST OF RATE OF READING

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MOST tests of rate of continuous reading use time intervals ranging from one to five minutes in length. The length of these tests suggests that the makers of rate tests feel that rate of reading can be measured satisfactorily in a brief span of time but that there is no definite agreement among them concerning the most desirable length of a rate test.

The literature concerning reading tests contains little information about the relationship between the length and the reliability of tests of rate of reading. There is no assurance that the reliability of rate tests improves in accordance with predictions resulting from the Spearman-Brown formula, since increasing the amount of time given to a test may not be equivalent to increasing the number of items in it. It appears that the question of whether or not increasing the length of a test of rate of continuous reading adds significantly to its reliability can be answered empirically more readily than in any other way.

An attempt was made to study the relationship between the length and the reliability of a test of rate of reading by the following procedure. Two forms of a rate test, each consisting of 177 lines of mimeographed reading material were constructed. One form dealt with the story of writing and the other with the story of the calendar.[1] Twenty multiple-choice comprehension questions were made for each form.

The two forms were administered to seventy-eight pupils in the Junior class of the University of Chicago High School. Half of the pupils read Form A first and the other half read Form B first. At the end of each hundred seconds for the first five hundred seconds, the examiner said "mark," whereupon the pupils marked the line they were reading when that signal was given. Sufficient time was then allowed for all pupils to finish reading the selection and to answer the questions.

[1] Two brochures by the American Council on Education entitled *The Story of Writing* and *The Story of Our Calendar* were followed rather closely, but the material was not quoted directly from those brochures.

As soon as the first form of the test was finished by all pupils, the other form was given in the same manner.

The score for each time interval was taken as the number of lines read from the time the test began. It was found that the time interval of five hundred seconds could not be used in the study because approximately a third of the pupils had finished reading before the examiner said "mark" the fifth time.

The correlations between the number of lines read in Form A and the number of lines read in Form B for the various time intervals are shown in Table I. The correlations predicted with the Spearman-Brown formula from the correlation for the 100-second interval are also shown.

TABLE I

RATE OF READING CORRELATIONS FOUND FOR DIFFERENT TIME INTERVALS COMPARED WITH CORRELATIONS PREDICTED WITH THE SPEARMAN-BROWN FORMULA

Time interval	Correlations found		Predicted Correlations
	r	P.E.	
100 seconds	.620	± .047	.620
200 seconds	.725	± .036	.765
300 seconds	.760	± .032	.830
400 seconds	.827	± .024	.867

The correlation shown in Table I tend to be rather low for reliability coefficients. They suggest that it is difficult to make reliable measurements of rate of continuous reading. However, the size of the coefficients was no doubt reduced to some extent because of the fact that half of the pupils took Form A first while the other half took Form B first. This procedure caused the practice effect to be in favor of Form B for the former group and in favor of Form A for the latter group.

The table shows that increase in the time interval allowed for reading raises the reliability of the test. The increase in reading reliability is, however, in each instance somewhat less than the increase predicted with the Spearman-Brown formula.

The correlations suggest that the time allowed for most tests of rate of reading (one minute to five minutes) is too short for high reliability. The use of an interval of 400 seconds results in reliability that is definitely superior to 300 seconds (five minutes) or a shorter interval. It is probable that an even longer time interval would give still more dependable results. The importance of rate of reading in school work surely justifies the making of highly reliable measurements of it, even though such measurements call for time limits two or three times the length of those now commonly used in rate tests.

AN EXAMPLE OF REPLICATION OF AN EXPERIMENT FOR INCREASED RELIABILITY

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IN this article findings will be presented from a set of massed experiments involving seventeen pairs of matched groups, 104 measured group contrasts, all centered on the same hypothesis.[1] The principle of massing experiments is one of first importance in educational research. As one surveys the literature reporting results of controlled experiments in education he is struck by the prevailing note that "no statistically significant difference was found," and the implication is left that the two compared procedures are of equal value. The report, "no statistically significant difference," should nearly always suggest something wrong with the experimentation; for there are probably no two procedures that are really of equal merit, and most certainly not so many pairs of them as the literature of educational research would indicate. The inconclusiveness is due to the use of invalid or unreliable measures, or to small populations, some of which defects can be overcome by massing experiments.

How greatly the differentiation between groups in experimentation can be increased by extending measurements is emphatically shown in an experiment by R. S. Rice.[2] When Dr. Rice worked up his comparisons on the basis of single tests he got differences prevailingly, but not exclusively, in the same direction by critical ratios averaging 1.5 or 2. But when he summed the scores on ten sub-tests, his critical ratios jumped to seven or eight, and in two cases even to sixteen. At first sight such great increase in reliability merely from summing sub-tests seemed impossible. But the application of statistical theory to the problem showed that, on certain very reasonable assumptions, not only was such surprising increase in relaibility possible from summing many independent tests, or from one greatly lengthened test, but it was the very thing to be expected. Where, then, experimental and control groups are little marked off from each other on the basis of short tests, they may

[1] A prior set of massed experiments, centered on the question, "Does Moral Instruction Influence Practical Conduct?" was published in the *Journal of Educational Sociology*, December, 1933 (whole number), "The Penn State Experiments on Character Education" edited by C. C. Peters.

[2] Rice, R. S. "Extensive Reading versus Intensive Textbook Study As a Means of Acquiring a Knowledge of Scientific Facts and Principles," *Journal of Experimental Education*, IV (June, 1936), pp. 376-402.

become very widely spaced on the basis of many tests summed together. And a corresponding thing is true when the additional measurements are in further samples rather than in the same sample.

Another reason why massed experiments tend to give higher reliability is because the effective populations are much increased. Other things being equal, the critical ratio in experimentation increases as the square root of the number of individual pairs in the experiment. Thus by massing twenty-five experiments on the same theme the equivalent of a critical ratio five times as great as that from a single experiment may be expected, provided the populations of the samples are substantially equal. And the spirit of this holds, as we shall show later, whether or not the situation lends itself to a direct consolidation of the populations.

Not only is reliability vastly increased by massing experiments but so also is validity. An experimental method can never be wholly divorced from the personal equation of the teacher using it, nor from the personalities of the pupils constituting the group. But if fifteen or twenty or more pairs of groups are involved, under different teachers and different sample sets of pupils, the method tends to get isolated as the single variable, and conditions become those of a much more typical sample of the total population than could otherwise be expected. Hence the determination is likely to be a more valid one.

In the set of experiments to be reported here in illustration of the principle of replication, the differential factor was the Contract Plan of teaching versus the traditional Recitation. The experiments were made by graduate students at the Pennsylvania State College and written up as masters' theses. Each of the thirteen experimenters applied the technique of the contract plan in such manner as seemed best adapted to his own subject and his own local situation. But all of them described the method in their write-ups and there was a marked uniformity in what they meant by it. It characteristically included:

1. An assignment over a long unit at a time—six to ten units making up the year's work.

2. Much of the work of a unit individual rather than group work, with a maximum of individual conference with the instructor and a minimum of group recitation.

3. A mimeographed syllabus, with abundant references to library materials and suggestions for self-help, usually a workbook and draft upon many texts rather than upon a single one.

4. An effort at motivation in the form of a challenge to the pupil to achieve what he felt worth achieving.

5. Often differentiated assignments for different ability and effort levels, with the amount to be done for an A, B, C, or D grade objectively indicated.

The recitation method was characterized by assignments covering only the next day's work, by question-and-answer or topical recitation, by more dominance of the class exercise by the teacher than by the pupils, and by such motivation and such adaptation to individual differences as a situation of this type permits. The recitation method was, however, no mere "man of straw"; all the teachers made a sincere effort to use it at its best, since most of them were faced with the necessity of a choice between these alternatives for their future use and wished true guidance in making this choice.

We shall give a very brief sketch of each experiment, then summarize for the set as a whole:

1. George A. Williams, Second Year Algebra. Two experimental and two controlled groups. Pupils paired individually on general intelligence test scores and on first year algebra grades. Measurement in terms of gains on Thorndike Algebra test and on Coöperative Algebra Test, and on sum of objective tests given at end of each unit, and on final grades. All eight differences were in favor of the contract method by critical ratios three of which were four or above and the others small.

2. Grace Allan Wray, Plane Geometry. Pupils paired on several objective test bases. Measurement by Lane-Green Unit Tests and by changes on seven tests of personality traits. Academic achievement was significantly higher for the contract group. On the personality tests the differences between mean gains for the two groups were small but all except one of them favored the contract group.

3. Edwin W. Cruttenden, Plane Geometry. Pupils matched on composite from five different objective measures of aptitude and previous achievement. Comparative achievement measured by six objective tests, each covering one unit of work, by the Orleans Geometry Achievement Test, and by teachers' marks. On all except one of these measures the advantage was on the side of the contract group. The exception was the teacher's final examination, where the difference was .2 in favor of the recitation group with a standard error of this difference of 2.02, a completely insignificant difference.

4. H. P. Breininger, First Year Algebra. Twenty pairs of pupils in a private day school, paired on ninth grade marks and on intelligence test scores. A rotation experiment, each group having two blocks of work by each method. The differences were substantially zero, three of them favoring the recitation method and one the contract method. In view of the finding in others of this set of experiments that differential success tends to increase with time, the contract pupils being at a handicap in the early stages, a rotation technique is likely to obscure the real facts in an experiment on this theme.

5. S. Elizabeth Cunkelman, English Grammar and Composition. Pupils matched on a combination of grades and intelligence test scores. Achievement measured by objective tests at the end of each of ten units of work and by five general tests: deportment, Iowa Language, high school average, "findings test," and report card average. On the first two unit tests the recitation group excelled; on the succeeding unit tests the contract group excelled, with increasing differentials as the year went on. In all five of the general tests the contract group exceeded the recitation group, mostly by significant differences.

6. A. C. Heigis, English Literature. Paired on general intelligence scores. Achievement measured by objective tests of appreciation, comprehension, character identification, vocabulary, and passage identification. All differences were in favor of the contract method. When the scores from the several types were aggregated for the whole year, the difference reached 3.34 times its standard error.

7. Fred F. Bastian, Biology. Paired on composite of intelligence test scores, general science marks, and average grades for previous year. Three pairs of parallel sections, one pair taught by investigator and one by each of two other teachers. Measurement by unit tests, mid-year test, and final test, and by gains on Ruch-Crossman Test. Three of the sets of parallel groups gave differences consistently favoring the contract method; the other set gave differences consistently favoring the recitation method.

8. H. L. Storms, General Science. Paired on general intelligence test scores. Attainment measured by sum of ten objective tests given at close of the several units of work. A difference 3.7 times its standard error favored the contract method. A delayed test, given the following fall with the Ruch-Popenoe Test, showed a difference equal to 3.03 times its standard error, also favoring the contract group.

9. H. C. Singleton, General Science. Matched on I. Q. and initial scores on Ruch-Popenoe Test. Measured in January and in June on Ruch-Popenoe Test. Also on Bernreuter Personality Inventory, on Harper Test of Social Beliefs, and on Maller Test of Honesty. In academic achievement first semester favored the recitation method and by end of year advantage had swung to side of contract method by a difference 1.6 times its standard error. All five of the measures of personality traits favored the contract method by end of the year.

10. J. T. Yurkewitch, U. S. History. Measurement in terms of gains on the Columbia Research Test, the Pressey-Richards Test, and the Wesley Test, the two latter being worked up into six sub-tests. On four of these six sub-tests the differences favored the contract group, as did the difference also on the Columbia Research Test. On the Columbia Test the difference was 3.1 times its standard error. The pupils had been matched on general intelligence.

11. John A. Campbell, Economics. Sixty matched pupils, selected from five different sections. Measured by six tests, one at the end of

each unit, and by two forms of the American Council Economics Test, at end of first semester and end of year. The first semester all differences favored the contract method, as did also the difference on the American Council Test at the end of the year, covering the work of the year as a whole. But the three unit tests given the second semester gave differences favoring the recitation method, due, apparently, to the fact that these units were very heavy ones which did not lend themselves to independent study.

12. C. A. Fritts, Civics. Pupils for one year matched on general intelligence with an equal number from another year, the contract method the former year and the recitation the latter year. Practically zero differences, three of them favoring the recitation method and one the contract method.

13. T. R. Kemmerer, Bookkeeping. Measurement by Carlson Bookkeeping Tests, a test on each of six units. On the first unit the difference favored the recitation group. On each of the other five units the difference favored the contract group, with critical ratios that, on the whole, increased as the year went on. Differences on the Bernreuter Personality Inventory were all favorable to the contract group by small margins.

Table I summarizes the outcomes in terms of the frequencies with which the differences between means lay in favor of one group or the other.

The determination of the issue from this set of experiments taken collectively is highly reliable. By methods described in the note following this article, it was roughly estimated that the reliability corresponds to that of a critical ratio of six or seven. That indicates odds of more than a billion to one—that the true difference lies on the side of the contract method. That is very high reliability.

But that is not really so good as it may sound. It only means that we have already used so many cases that we know with a high degree of assurance that if we could continue to experiment until we had drawn upon an indefinitely large population, and if from this vast population we could consolidate and average the measurements of attainment, the *average* made by the contract pupils would be somewhat larger than the average made by the recitation pupils. It does not mean at all that any particular teacher may use the contract plan with assurance that his particular class will make a higher average score on a pertinent measuring instrument than that class would make if taught by the recitation method. On the contrary, it means that, merely on the basis of fluctuations from sampling, the odds are only about four to one that a class taught by the contract method will make a higher average score in

TABLE I

SUMMARY OF THE FREQUENCIES WITH WHICH THE DIFFERENCES LAY IN FAVOR OF THE CONTRACT OR THE RECITATION METHODS OF TEACHING IN THE PENN STATE EXPERIMENTS

Experimenter	Subject	Number of measured comparisons	Number favorable to contract method	Number favorable to recitation method
Williams	Algebra	8	8	0
Wray	Geometry	11	10	1
Cruttenden	Geometry	8	7	1
Breininger	Algebra	4	1	3
Cunkelman	English	15	13	2
Heigis	English	5	5	0
Bastian	Biology	16	12	4
Storms	Gen. Sci.	2	2	0
Singleton	Gen. Sci.	7	6	1
Yurkewitch	U. S. Hist.	7	5	2
Campbell	Economics	8	5	3
Fritts	Civics	4	1	3
Kemmerer	Bookkeeping	9	8	1
	Totals	104	83	21

measurable attainment than a similar one, or the same one, taught by the recitation method; the odds are one to four that the reverse will be true. Much less does it mean that any particular pupil will be sure to reach higher measurable attainment if taught by the contract method. A great overlapping of attainment between sets of paired pupils must be expected even on the basis of such highly reliable differences between means as we have mentioned. The odds are only about five to three that a particular pupil will do better under the contract method than under the recitation method. The only thing gained from such highly reliable determination as that involved in this set of experiments is the ability to say with great assurance that the *probability* is a little greater that a particular pupil will do better under the contract method than under the recitation method, and the probability is still greater that the *average* attainment of *a class* taught by the former method will be somewhat higher than if taught by the latter. But it is now known that all law, even in the physical sciences, is merely an expression of probability; in such fields as education and the social sciences the odds are lower with

respect to alternative behaviors than they are in those behaviors with which physics deals. If a stock dealer could always bet on the market in favor of the greater known probabilities, he would get rich in the long run. And if educators can similarly bet on known greater achievement probabilities, they will in the aggregate vastly increase their total attainments. Such advantage is the basic meaning of reliability in experimentation, or in the determination of laws by other forms of scientific research.

Note on Reliability in Replicated Experiments

By a straightforward but somewhat complicated algebraic development, it can be shown that the critical ratio from a set of coördinated experiments is as follows:

$$R_t = \frac{\Sigma R\sqrt{n}}{\sqrt{\Sigma n}\cdot\sqrt{1+\left(\frac{\Sigma R\sqrt{n}}{\Sigma n}\right)^2}}$$

where R_t is the inferred critical ratio from the set of experiments as a whole, the R's are the several ratios from the samples, and the n's are the populations of samples. $\Sigma R\sqrt{n}$ means that each ratio from a sample is weighted by the square root of the population of the sample, and the products summed.

This formula assumes that through all the samples there runs a single constant experimental function, equally and validly measured in all of the samples. If we add the additional assumptions that the populations of the samples are approximately equal in size, and that the σ of the whole aggregate of paired differences does not differ appreciably from that of a single sample, this formula reduces to the following very simple one:

$$R_t = M_R\sqrt{a}$$

where M_R is the mean of the ratios from the samples and a is the number of samples. On the assumptions in this second formula, a set of 25 experiments would give a reliability corresponding to a critical ratio five times as great as the average one from the separate samples. This would, of course, be true only if the samples were wholly independent of one-another. If the samples are somehow correlated, as would be the case if they involved the same pupils or the same teacher, this principle would not hold without due allowance for the extent of correlation; but we know at present no statistical technique by which this allowance could be quantitatively determined. In practice the assumptions back of the formulae given above are likely to be so poorly fulfilled that it is best not to place much confidence in a mathematically inferred ratio as far as its exact size is concerned but to stop with the assurance that a set of differences prevailing in the same direction indicates greater reliability than that expressed by the ratios of the samples taken singly.

THE OCULAR CONDITIONS OF 350 POOR READERS

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EYE troubles as handicaps to learning have been widely recognized by educators and quite a number of studies relating to the eyes and their function in education have appeared in recent years. These studies have contributed to our understanding of the subject but they have been limited, in most cases, by rather small numbers of cases. They have also lacked uniformity of method of examination of the eyes and, having been made by educators, psychologists, optometrists, and physicians, the interpretation of the results must have been colored by the experience and training of the various individuals, and the validity of their findings must necessarily have suffered because of this.

The present study was carried out in order to provide data on the eye conditions of a larger number of poor readers, all of whom had been examined professionally by the same examiner, using standard, accepted methods. In addition, the subjects of investigation reported here may be taken to represent the minimum procedure for adequate eye examination of poor readers and other educationally retarded children. A minimum procedure, however, does not function as a complete unit. Eye tests, and all kinds of physical examinations, require a certain amount of discretionary judgment on the part of the examiner. They are like educational tests to the extent that they give us information about the individual, but they differ in the fact that there is no single correct answer. Every finding must be weighted in relation to *the child as a whole;* his physical and mental make-up, his health, state of nutrition, habits of life, and the demands made on him by the life that he is required to lead. Just as one allows for foreign language handicaps or retardation in reading when giving a Stanford-Binet Test, so too must the eye examiner take into account an infinitely greater number of disturbing factors and shape his examination, diagnosis, and treatment by them.

The study presents a review of 350 poor readers. The median age of the group was 9.557 years, and the median grade was 3.625. Eighty percent of the poor readers were boys and 20 percent were girls. The median intelligence quotient was 100.322, and about half of the cases fell between 90 and 110.

Vision.—For many years educators as well as physicians have recognized visual defects as handicaps to learning. Of the cases included in this study about a third had defective vision when both eyes were in

use. About two-thirds of the right eyes had defective vision, as did approximately three-quarters of the left eyes.

Refractive error.—Refractive error is a term applied to incorrect focusing of the eyes. It is measured in diopters; units of focal length. Some variation in opinion exists among oculists and optometrists as to how much refractive error is important. Those who are interested in the physical aspect rather than in the educational side often regard defects of .75 or 1.00 diopter and less as not requiring correction in children, especially if the condition is one of hypermetropia. (Far-sightedness.) On the other hand, many place the point at .50 diopter or even lower. It has been my observation over a long period of work with educational disability cases that one cannot set a definite point below which there is no need of correction and above which correction is necessary to avoid trouble. Individual differences in eyes, general physique, and health determine what degree of eye defect requires attention and what degree will interfere with school work when uncorrected. I usually suspect cases over .62 diopter and rarely if ever let cases of 1.00 diopter or more go without corrective treatment. On the other hand, I have seen cases in which correction of errors as small as .12 diopter, especially in astigmatism, has been followed by marked relief from discomfort and by a reduction in the rate of fatigue in close work. Educators must remember the mistake many people made in regarding the I. Q. as a fixed indicator of ability, and not condemn or ignore eye defects as represented by arbitrary physical measurements. Every case is an individual problem.

In the present study over half exhibited refractive errors of more than .50 and we know that correction would be helpful in many of these cases. A little more than a third of the entire group presented errors of 1.00 or more diopters. Such cases require medical or optical attention, or both. It is noteworthy that there was a greater incidence of markedly defective right eyes with a relatively good left eye than in the reverse condition. This is in no way inconsistent with the finding of defective vision in three quarters of the left eyes, since vision is not inflexibly linked to the degree of refractive error. A perfectly focused eye may afford subnormal vision, and likewise a defective eye may afford normal vision, the visual acuity in each instance being determined by other factors than the refractive condition alone.

Coördination of the eyes.—Professional measurements of the degree of coördination of the eyes are made when the eyes are being used for

distant vision, as in looking across a classroom, and again for near vision, such as is required in reading and doing desk work. Investigators studying groups of poor readers have found little or no incoördination of the eyes in distant vision and the findings in this study are in agreement with them. About a tenth of the poor readers exhibited deficiencies of coördination in distant vision. Eye coördination in reading vision is of much greater importance to educators, and working at the reading distance I found incoördination difficulties in about one half of the cases. In more than a quarter of all of the cases in the study incoördination was found in marked degree. The median for horizontal coördination was over three prisms diopters of exophoria, a tendency to insufficiency of convergence. Differences of opinion as to the significant amount of exophoria in near vision have ranged from 0 to 8 prism diopters. Such estimates have almost invariably included data secured from persons of all ages in a single group and therefore they are not applicable to groups of children. In a previous study[1] I found a definite tendency for the physiological amount of exophoria to increase with age, and in a group of school children I found the median well *below* 1.00 prism diopter, while that of the group of people over 60 years of age was more than 8.00 prism diopters. An earlier study[2] of 143 poor readers placed the median coördination defect for reading vision at 3.333 prism diopters, while in the present study, with a larger number of cases I find the median among poor readers to be 3.287 prism diopters. I regard this as significant of a tendency among poor readers to converge inefficiently. A reconsideration of near vision coördination studies, with due weight being given to the variation of physiological exophoria with age, will doubtless result in directing more critical attention to convergence deficiencies as handicaps to reading.

Fusion and Ductions.—The amplitude of fusion convergence is a measurement of the ability of the individual to combine mentally the picture from one eye with that from the other, producing single, binocular, vision. Most of the tests now being made for fusion deficiencies do not take into account the fact that fusion decreases with the size of type being read.[3] For this reason many cases which pass ordinary fusion tests with

[1] Eames, T. H. "Physiologic Exophoria in Relation to Age," *Archives of Opthalmology*, IX (January, 1933), p. 104.

[2] Eames, T. H. "A Comparison of the Ocular Characteristics of Unselected and Reading Disability Groups," *Journal of Educational Research*, XXV (March, 1932), p. 211.

[3] Eames, T. H. "Low Fusion Convergence as a Factor in Reading Disability," *American Journal of Ophthalmology*, XVII (August, 1934), p. 709.

ease are found to be deficient for the size of type being used in their school texts. I found about one-third of the cases deficient for fusion of twelve point type.[4] The median fell at 5.105 prism diopters. Ductions are further measurements of fusion and give information as to the condition of fusion and, to some extent, the ability of the ocular muscles to coördinate the eye movements. We have been lead to regard as normal that condition in which the measurement of adduction is at least three times that of abduction (3:1), and in which supra and infraduction are in the relationship of 1 : 1.[5–6] The poor readers in this study presented medians for the four principal ductions which were in the relation of 1 : 1 for supra and infraduction but which were not quite in the relation of 2 : 1 for adduction and abduction respectively. This is suggestive of a tendency to insufficiency of convergence among poor readers, and is consistent with the finding of exophoria in near vision, which was discussed in the paragraph on coördination. The finding of a 1 : 1 ratio for supra and infraduction, together with absence of cases of vertical incoördination is evidence that vertical imbalances of the ocular muscles are of little *statistical* importance. I have traced habitual shifting from line to line in reading to this rather rare condition in several cases which occurred outside the present group.

Central visual fields.—Previous studies indicated a probable relationship between the extent of the central visual field and the span of recognition.[7–8] The frequency was calculated for cases in which there was five or more degrees of restriction in any of the four principal radii. (Horizontal and vertical.) About one-fourth of the cases showed such restriction horizontally (probably related to the span of letter and word recognition), and approximately an equal number exhibited restriction vertically (probably related to the span of letter and number recognition in column work.) The tendency often exists for restriction to occur in both diameters. In both horizontal and vertical diameters the central fields for the left eyes exhibited a slightly greater incidence of contraction.

[4] Wood, C. A. *Practical Medicine Series*, Vol. III (Chicago: Year Book Publishers, 1921), p. 31.

[5] Tscherning, M. *Physiologic Optics* (Philadelphia: Keystone Publishing Co., 1924), p. 363.

[6] Worth, Claude. *Squint* (Philadelphia: Blakiston, Son & Co., 1924), p. 183.

[7] Lloyd, R. I. *Visual Field Studies* (New York: The Technical Press, 1926), pp. 16 and 198.

[8] Eames, T. H. "Restrictions of the Visual Field as Handicaps to Learning," *Journal of Educational Research*, XXIX (February, 1936), pp. 460-465.

TABLE I

FREQUENCY

Characteristic			Frequency
Sex			
a. Males			80.0%
b. Females			20.0%
Intelligence Quotient			
Normal (90 to 110)			56.81%
Superior (110 and above)			16.02%
Inferior (Below 90)			27.17%
Visual Acuity	Normal or better* (20/20 and above)		Subnormal (20/30 and below)
a. Both eyes	67.56%		32.44%
b. Right eyes	30.30%		69.70%
c. Left eyes	25.75%		74.25%
Refractive error			
a. Refractive errors of .62 diopter† and higher			58.59%
b. Refractive errors of 1.00 diopter and higher			35.21%
c. Refractive error in right eye of 1.00 diopter or more, and in the left eye .50 diopter or less			5.91%
d. Refractive error in left eye of 1.00 diopter or more, and in the right eye .50 diopter or less			1.12%
Eye Coördination	Distant vision		Near vision
a. Orthophoria‡ or heterophoria§ of less than 4 prism diopters‖	89.39%		50.30%
b. Heterophoria of 4 or more prism diopters	10.61%		49.70%
c. Heterophoria of 6 or more prism diopters	6.06%		28.18%
Amplitude of Fusion Convergence			
a. Less than 4 prism diopters			31.46%
b. 4 or more prism diopters			68.54%
Central visual fields	Cases presenting contraction of five or more degrees		
	right eyes	left eyes	both eyes
a. Horizontally	9.41%	11.76%	24.71%
b. Vertically	12.94%	15.29%	28.23%
Lateral Dominance			
a. Right eyed and right handed			56.5%
b. Left eyed and left handed			6.2%
c. Right eyed and left handed			8.5%
d. Left eyed and right handed			24.3%
e. Ambieyed and right handed			2.2%
f. Ambieyed and left handed			0.6%
g. Ambieyed and ambidextrous			1.1%
h. Right eyed and ambidextrous			0.6%

* Snellen Standard.

† Diopter.—A unit of focal length.

‡ Orthophoria.—Perfect eye coördination.

§ Heterophoria.—Imperfect eye coördination.

‖ P.D.—Prism diopter. A unit of prism power.

TABLE II

CENTRAL TENDENCY

Characteristic	Median	Q_1	Q_3
Age in years	9.557	8.188	11.371
Grade	3.625	2.416	5.151
I.Q.	100.322	88.333	107.419
Eye coördination			
a. Distant vision	0.000 P.D.	0.995 P.D. Exophoria	0.956 P.D. Esophoria¶
b. Near vision	3.287 P.D. Exophoria**	5.858 P.D. Exophoria	0.527 P.D. Exophoria
Amplitude of Fusion-Convergence	5.105 P.D.	2.500 P.D.	6.621 P.D.
Ductions			
a. Adduction	15.166 P.D.	9.035 P.D.	20.650 P.D.
b. Abduction	9.692 P.D.	6.133 P.D.	9.750 P.D.
c. Supraduction	3.380 P.D.	2.718 P.D.	3.976 P.D.
d. Infraduction	3.294 P.D.	2.617 P.D.	3.970 P.D.

¶ Esophoria—Tendency to overconvergence of the eyes.
** Exophoria—Tendency to insufficiency of convergence of the eyes.

Lateral dominance.—Lateral dominance is so well known to educators and psychologists that little need be said of the results except to call attention to the tabulation of the various combinations and their frequencies. About half of the cases were right eyed and right handed, and about a quarter were left eyed and right handed. The finding is in agreement with those of previous studies.

To secure the maximum value of the data presented in this study it should be compared with corresponding data secured by examination of an equal number of children whose reading is at grade. This would show the differences between the group of poor readers and the general school population. A still better procedure would be to compare both groups with one of equal number composed of children who approach normal as regards eye and general physical condition, and who are at grade in their reading and other school subjects. The present investigator has neither time nor special grants for this purpose and so presents his data relating to the group of poor readers for the use of others who may have or may bring together the requisite number of "average" or "normal" cases for comparison. In an earlier study he compared a smaller group of poor readers with an equal group of children without educational trouble, and this data may be found in the *Journal of Educational Research* for March, 1932. The earlier study covers several of the fields of investigation included in the present report. The tests and procedure in these fields were similar to those employed in the present

study and the results are comparable without allowance for differences in technique or examiner.

Summary.—The eye examinations of 350 poor readers are reviewed and frequencies and central tendencies are presented. The fields of investigation include age, grade, sex, intelligence, visual acuity, refraction, coördination of the eyes in distant vision and in near vision, the amplitude of fusion convergence for twelve-point type, ductions, dentral fields, and lateral dominance.[9]

[9] A non technical explanation of the various fields of investigation may be found in the article by Eames, T. H. "A Frequency Study of Physical Handicaps in Reading Disability and Unselected Groups," *Journal of Educational Research*, XXIX (September, 1935), pp. 1-5.

ART TALENT AND RACIAL BACKGROUND

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ALL teachers and supervisors of art are keenly interested in the relationship of art talent to racial backgrounds, both those of heredity and of environment. Unfortunately, very little study has yet been done in scientific experimental studies in this field in particular or that of art education in general.

The following study does not pretend to have the scientific accuracy that would be necessary to state the conclusions as absolute. Much preliminary scientific work needs to be done before a study such as this could be accurately carried on. Nevertheless, the writer feels that it opens the way toward further valuable studies in the field, and the tentative conclusions are interesting, and of use to teachers and supervisors.

This study was carried on in the three laboratory schools of the New Haven Unit of the Teachers College of Connecticut during the school year 1934-1935 with a group of senior students who were especially interested in art education. A supplementary, less comprehensive study was carried on in the year 1935-1936 with two junior students in one of the New Haven city schools where there is a large Negro attendance.

In order to select the pupils who most clearly approached the possession of art talent, some less subjective method than the judgment of the teacher or supervisor had to be devised. Consequently, letters were sent to one hundred outstanding artists (painters, sculptors, etchers, etc.) and to art educators in all sections of the United States, asking what, in their judgment, were the important elements comprising art talent. An analysis of these letters showed that the following four characteristics were most often mentioned:

1. Love for and interest in art.
2. Ability to choose the good from the poor in line, light and dark, and color.
3. Ability to represent visual images graphically.
4. Creative ability — variously defined — sometimes as imaginative ability, but in all cases signifying the quality which makes a child's work different from the average, of the group.

All of the children in the three laboratory schools (Scranton, Roger Sherman, and Henry Barnard), with the exception of those in the kindergarten were tested for the above four qualities. These three New Haven City elementary schools cover the grades from kindergarten

through the sixth, and represent an average city school's population.

The testing to discover these four important elements of art talent was carried on in four different ways.

1. No standardized test has yet been devised testing love for and interest in art. Teachers' subjective judgments were used here. All children were graded from 1 to 5 (5 high) for this trait, by the individual teacher.

2. Two standardized tests, the McAdory Art Judgment Test, and the Meier-Seashore Art Judgment Test, were used in grades 4-5-6 to test for ability to choose the good from the poor in line, light and dark, and color. There is no standardized art judgment test suitable for use in grades 1-2-3, so the students carrying on the study worked out 40 plates similar to the McAdory test, but much more simple, each plate having two choices in either line, light or dark, or color—one good the other poor. These were judged by the honor students in the composition classes at the Yale School of Fine Arts. Any plate on which there was not agreement was discarded. This left thirty plates on which there was unanimous agreement. While this, of course, did not make the test standardized, it was a better yardstick than only the subjective judgments of the nine students and art director making the study.

3. Ability to represent visual images graphically was tested by the Kline-Carey Standardized Drawing Scale.

4. There is no standardized test to measure creative ability. Consequently, two stories were chosen which allowed for much play of imaginative expression, and were read to all of the grades, the children drawing any part of them they wished. "The Sugar Plum Tree" by Eugene Field was read to grades 1-2-3, and the "Wedding Procession of the Rag Doll and the Broom Handle" from Carl Sandburg's "Rootabaga Stories" to grades 4-5-6. All of the papers from each grade were judged on a scale from 1 to 20 (20 high), each grade having its own scale.

Then a list comprising the highest ten percent of each test for each grade was made, and, if a child's name appeared in at least two of the lists, he was selected as one of those who probably most nearly approached the possession of art talent, according to the criteria previously mentioned. Case studies were then made of each one of the children on the final list.

Table I portrays the number and percentage of children from each of the training schools in the final list.

It can be noted that Henry Barnard School with only 24 percent of the population of the three schools has 37 percent of the students selected for the study, while Scranton School, with 44 percent of the total enrollment has only 30 percent of those in the case study. Racial stock in both schools is predominantly Russian, American, and Italian. The extremely poor and congested environment of the Scranton school

TABLE I

NUMBER AND PERCENTAGE OF CHILDREN FROM EACH SCHOOL

School	Enrollment		Case Study	
	Number	Percent	Number	Percent
Roger Sherman	443	32	27	33
Scranton	609	44	24	30
Henry Barnard	341	24	30	37
Total	1,393	100	81	100

would indicate that such environment may not be conducive to the development of art talent.

Of the 81 students selected for the case study, 45 were boys and 36 were girls. Only 13 of the 81 had ever visited an art exhibition or museum, yet 71 showed marked interest in art activities at home. Of the 81 pupils, 18 had parents or grandparents who had shown evidence of art talent in some field such as painting, sculptor, architecture, etc., 30 had brothers or sisters showing such interest, and 11 had uncles, aunts, or other close relatives who had demonstrated decided interest in art. Nine of the 81 children had also shown marked interest in music. It should be stated that 29 of the 81 came from homes which seemed to be above the average in cultural advantages.

Referring more directly to the subject of racial backgrounds, Table II portrays the number of each nationality in the study and in the total population of the three schools under consideration.

TABLE II

NUMBER OF CHILDREN OF EACH NATIONALITY IN ENROLLMENT AND IN STUDY

Nationality	Enrollment Number	Case Study Number
American (white)	552	34
American (negro)	34	2
Armenian	4	0
Austrian	16	1
Canadian	7	1
Danish	2	0
English	12	1
French	3	1
German	13	5
Greek	9	0
Hungarian	4	0
Irish	11	3
Italian	360	23
Japanese	1	0
Lithuanian	4	0
Polish	20	0
Rumanian	1	0
Russian	320	10
Scotch	6	0
South American	2	0
Swedish	2	0
Turkish	2	0
Ukrainian	6	0
West Indian	2	0
Total	1,393	81

Although the members in the study are too small to warrant definite conclusions, and standard errors of percentage, if compiled, would doubtless invalidate many seemingly significant comparisons, it would seem that certain tentative conclusions may be drawn concerning the relationship between nationality and art talent. Some of the more important of these are as follows:

1. Negro children, comprising 2.3 percent of the school population comprise 2.5 percent of the list in the case study, suggesting that they are average in the possession of art talent.
2. Italian children, comprising 25.8 percent of the school population studied comprise 28.3 percent of those in the final list, suggesting that they are perhaps slightly higher than the average in art talent, but not so preponderantly so as is often asserted.
3. Russian children, comprising 22.9 percent of the school population considered, comprise 12.3 percent of those in the case study indicating that they appear to be definitely below the average in the possession of art talent.
4. American white children comprising 39.7 percent of the school enrollment studied, make up 41.9 percent of the final list, indicating little more than the average in the possession of art talent.
5. Although not brought out in the table, there were 26 Jewish children (32 percent) in the final list, as compared with 474 (34.8 percent) in the total enrollment being considered. This would seem to indicate that Jewish children have art talent practically equal to that of other races (a statement doubted by many), but not superior to other races (a statement asserted by many.)

However, there must be considered not only the small numbers of the nationalities involved but also the factors of cultural environment, art interest on the part of other members of the family (both of which have been previously mentioned here), and other factors before definite conclusions can be suggested.

The same type of study, with the omission of the case studies, was carried on by two junior students during 1935-1936 at Dwight School, with the hope of getting more material regarding Negro children. Of the 407 students considered, 41 were considered to have art talent, 20 boys and 21 girls. Table III shows the number of nationalities in the school and in the final list.

Some of the interesting tentative conclusions of this supplementary study follow. It will be noted that these are not in all cases the same as those in the other study, which contradictions in themselves suggest the need for further research in the field.

1. Jewish children, comprising 7.8 percent of the school population, comprise 7.3 percent in the final list, indicating that Jewish chil-

TABLE III

NUMBER OF CHILDREN OF EACH NATIONALITY IN SCHOOL AND IN STUDY

Nationality	Dwight School Enrollment	Final List
American (white)	160	19
American (Indian)	1	0
American (Negro)	87	8
Armenian	5	0
Austrian	2	0
Canadian	2	0
British West Indian	2	2
Danish	1	0
English	1	0
Greek	21	2
French	1	0
Hungarian	1	0
Irish	13	1
Italian	35	2
Japanese	1	0
Jewish	32	3
Lithuanian	2	1
Norwegian	1	0
Polish	3	0
Portuguese	2	0
Russian	13	0
Scotch	6	1
Swedish	3	0
Swiss	1	0
Syrian	2	0
Turkish	1	0
English-Russian	1	0
German-Hebrew	1	0
Irish-American	3	0
Italian-American	2	2
Turkish-American	1	0
Total	407	41

dren possess art talent to the same degree as other races.

2. Negro children, comprising 21.3 percent of the school population, make up 19.5 percent of those in the final list, again suggesting that they are close to the average.
3. Italian children comprising 8.5 percent of the Dwight School enrollment, comprise only 4.8 percent of the final list. However, it is interesting to note in this connection that the only two Italian-American children in Dwight School were in the final list.
4. American white children comprising 39.3 percent of the school population comprise 46.3 percent of the final group, suggesting superiority in the possession of art talent.
5. It might also be pointed out that both of the British West Indian children also found their way into the final group.

It is hoped that many other studies will be made in this general field. Some of which might follow up this beginning are the following. (Many such investigations have already been made, but there is room for further study.)

1. Correlation between McAdory and Meier-Seashore appreciation tests.

2. Correlation between test scores and teacher judgments regarding abilities.
3. Correlation between appreciation tests and general intelligence.
4. Correlation between drawing tests and general intelligence.
5. Further work on the appreciation test for primary grades.
6. Art talent in relation to sex.

THE CLEVELAND EXPERIMENT IN THE DEVELOPMENT OF HEALTH, CHARACTER, AND SCHOOL CITIZENSHIP

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PRELIMINARY STATEMENT

THIS study might be described as the statistical analysis of the middle stage of a long-time study in the development of health, character, and school citizenship in an elementary school in Cleveland, Ohio.

In the first stage, Elementary School A was set up as a curriculum school to experiment with new materials and methods for the development of health, character, and school citizenship. During this same period, Hiram House, a social settlement in the city of Cleveland, began to experiment tentatively to develop a program of social service by means of which the same traits of health and citizenship might be cultivated. The two experiments began to overlap as early as 1932, and by the fall of 1934 they were combined by the establishment of a group of Hiram House social workers in School A.

The present brief report is based upon an extensive statistical analysis of data collected at School A and a control school known here as elementary School B during the school years, 1934-35 and 1935-36. The analysis was made by National Youth Administration workers working under the immediate supervision of Mr. Herbert Bender.

In reading the report, it should be kept in mind that most of the comparisons are between total enrollments in the two schools, whereas the intensive work of the Hiram House staff was confined to approximately one-fourth of the population of the experimental school, beginning in the kindergarten and the lower grades.

THE STUDY

The Experimental School. The curriculum center for the creation of new materials and methods for the development of physical health

and growth, safety, thrift, character, and citizenship was established at Elementary School A in September, 1929.

The outcomes in a school set up to pursue such objectives should be better physical health, better social and emotional adjustments, increased industry, and better academic progress. Incidentally, the plans evolved, if successful, should offer some suggestions as to how to achieve these objectives in other schools.

Before explaining the particular techniques used to measure the outcomes, it may be well to describe briefly the organization of this school.

Pupils are assigned to grades, as first grade, second grade, etc., ostensibly according to achievement, but actually, very liberally, according to chronological age.

Ability levels are then established tentatively by means of group intelligence tests and standard tests of achievement. Final placement in class teaching groups, however, depends upon the recommendation of teachers and supervisory officers made only after careful study of all the data.

The bases for classification inside grade groups are as follows:

Pupils from 85 to 125 P. L. R.[1] are grouped into the usual teaching groups on the recommendation of teachers—Y-groups, 85-104 P. L. R.; X-groups, 105-124 P. L. R.

Pupils below 85 P. L. R., and some higher, who are failing in regular classes, are placed in ungraded groups.

Pupils whose P. L. R.'s are above 125, or below 70, are recommended to the Psychological Clinic for individual Binet tests.

Pupils whose individual Binet I. Q.'s are above 125 are assigned to Major Work classes.

Pupils whose I. Q.'s are 69 or below are assigned to special classes for the mentally defective.

The plan at School A follows, in general, the classification procedure used in all Cleveland public schools. However, pupils in School A are tested more frequently, and test results are subjected to more constant and careful examination in relation to other factors observed in the life of the child than in any other school in the city.

After class groups have been formed on the basis of P. L. R. or I. Q., an inventory of the educational achievement of pupils is made from the

[1] P. L. R. (probable learning rate) is the term applied to the I.Q. resulting from a group intelligence test. Used in Cleveland to distinguish it from the I.Q. obtained by an individual Binet test.

results of standard achievement tests, such as the New Stanford and the Metropolitan Achievement Tests. On the results of these tests, reported as grade-age, small teaching groups are formed within the class by subjects.

Character and personality rating by teachers and pupils are also part of the classification program at School A. This part of the program is largely in the hands of the pupils themselves. The Civic League is the pupils' organization which is responsible for the appearance of the building, the activities on the playground, the conduct in the halls and washrooms, the library program, and other activities of the pupils. Pupils choose their own leaders, who must qualify in scholarship, character, personality, and service to their class, their playmates, and to the school. Pupils are often moved from one group to another to give them better opportunity to develop leadership and to learn to coöperate with others. Such transfers may be made on the initiative of the pupil transferred, or on the initiative of his classmates or teacher. However, the principal, in approving such transfers, usually secures the assent and full coöperation of the pupil.

The Social Work Program in the Experimental School.—Coördinated with the school program of School A is an experiment to carry the character, health, and citizenship program of the school into the home and the community.

This home and community program was initiated by Mr. George A. Bellamy, Director of Hiram House. It was introduced into School A in September, 1934, after a preliminary period of experimentation in a number of other elementary schools in Cleveland.

Hiram House furnishes trained workers experienced in teaching and social work to teach children correct habits of eating and sleeping, and to show parents the importance of assisting their children in maintaining such schedules, according to generally accepted standards worked out by students of child health. Hiram House also furnishes trained group-work leadership in play and recreation, and in planning, accepting, and carrying responsibility for work outside of school hours. As stated before, this instruction is supplementary to the careful grading and classification of children upon the theory that character and citizenship develop best when the load the child is called upon to carry is closely adjusted to his capacity.[2]

[2] For a fuller description of the organization of School A, see Yearbook of the National Society for the Study of Education, Part One, 1936, pp. 254-256; and for a further explanation of the theory of character development set forth here, see the *Nation's Schools*, November, 1929, pp. 56 ff.

The Control School.—In the research project set up to evaluate the work of School A, another school approximately equal in size and character of population and community background was chosen as a control school.

The administrative, supervisory, and teaching staff of the control school, while not especially selected for the experiment, is considered by the supervisory and administrative staff of the Cleveland Schools to be above the average for the city of Cleveland.

The Data of the Study.—The statistical data collected from pupils in the experimental and control schools consisted of the diaries kept by the pupils for one week in the fall, and for one week in the spring, in which they recorded systematically, under the direction of teachers and parents, (1) food eaten, (2) hours slept, (3) games played, and (4) work done.[3] The statistical data collected from teachers consisted of ratings of pupils on the Haggerty-Olson-Wickman Behavior Rating Schedules, and the scores from an intensive educational and mental testing program.

THE OUTCOMES OF THE EXPERIMENT

As stated earlier in the article, the experimental school should, if the experimental program is to be adopted as a part of the regular program, show, on the part of pupils, better physical health, better academic progress, increased industry, or better social and emotional adjustment, or some combination of these desiderata.

Let us examine the evidence on these points, in so far as it is made available by school records or by the data collected during the experiment.

Attendance Records as Evidence of Health.—Better attendance would be some evidence of better physical health. When the two schools are compared, month by month, over a two-year period 1934-35 and 1935-36, it would appear that attendance at School A is slightly better. However, it would be difficult to assert that it is significantly better.

The Evidence of the Diaries as to Diet and Sleep.—Better habits of eating and sleeping would be some evidence of better physical health. When the two schools are compared as to the habits of eating and sleeping revealed in the diaries kept by children, the following facts are revealed:

[3] For an analysis of similar data collected in an earlier study, see Chew, Hawkins, and others, *Children's Food, Sleep, and Activities,* Hiram House Settlement, Cleveland, 1935.

TABLE I

PERCENT OF ATTENDANCE BY MONTHS, 1934-35 AND 1935-36
EXPERIMENTAL (A) AND CONTROL (B) SCHOOLS

TOTAL ENROLLMENT

Month	1934-35		1935-36	
	School A	School B	School A	School B
September	98.5	98.3	96.7	97.1
October	97.5	96.9	97.0	96.5
November	96.7	96.5	96.2	95.6
December	95.4	96.3	94.6	93.7
January	95.6	94.7	96.7	90.7
February	96.2	96.1	93.1	92.5
March	94.7	93.3	84.8	89.5
April	92.8	91.1	90.2	90.1
May	89.0	88.4	94.8	94.2
June	96.5	92.2	98.9	95.7

Food.—Pupils attending School A, the experimental school were better fed from the beginning of the controlled experiment, until June, 1936, than they were at School B the control school. This is probably due to the fact that the main elements of the program had been in operation at School A for two years or more before observations of the work at School B were injected into the picture. The improvement at School B is generally attributed by teachers and others in both schools to the effort on the part of mothers and children in the control school to understand and appropriate the fundamental elements of the School A program. This is possible because the schools are in contiguous districts.

TABLE II

PERCENTILE RANKING OF FOOD SCORES FOR BOYS AND GIRLS FOR ONE WEEK IN DECEMBER, 1934; JUNE, 1935; OCTOBER, 1935; AND JUNE, 1936

Percentile	School A, Experimental				School B, Control			
	Dec., 1934	June, 1935	Oct., 1935	June, 1936	Dec., 1934	June, 1935	Oct., 1935	June, 1936
99	59	79	48	61	30	68	—8	41
90	—13	—17	—18	—1	—15	—30	—22	—5
80	—28	—31	—33	—19	—39	—39	—36	—18
70	—39	—49	—41	—30	—50	—55	—47	—29
60	—47	—45	—47	—37	—56	—59	—52	—35
50	—52	—51	—52	—43	—61	—65	—59	—40
40	—58	—56	—57	—48	—66	—75	—62	—46
30	—63	—62	—64	—55	—70	—79	—71	—55
20	—69	—68	—70	—60	—72	—86	—78	—61
10	—77	—77	—80	—70	—78	—92	—85	—68
1	—103	—96	—102	—100	—96	—107	—94	—91

Note.—The standard equals 0. The scores reported above are formulated by finding the difference between total food units per week and a standard food score of 119 units.

Certainly, no one could conclude from the data at hand that the experimental school has a decidedly better plan for teaching children correct dietary habits. However, one might conclude that nearly all children in both schools are so inadequately fed, according to generally accepted standards of child feeding, that their future health and efficiency is seriously endangered.

The data with respect to food are summarized in Table II.

Sleep.—As to sleep, the pupils in School A are always a little better than those in School B. However, neither school is ever up to standard, and in both schools the scores correlate perfectly with the hours of daylight at the time the diaries were kept.

There is no positive evidence, then, that the special program in the experimental school is producing any better habits of sleep among children there.

TABLE III

AVERAGE SLEEP SCORES FOR BOYS AND GIRLS

School	Total Averages (Reported in Raw Scores)			
	Dec., 1934	June, 1935	Oct., 1935	June, 1936
School A Experimental	19.89	17.57	18.42	16.70
School B Control	18.99	15.64	18.09	16.45
Mean	19.45	16.60	18.25	16.58

Note.—Twenty is taken as the score for a pupil sleeping the proper number of hours for him.

Closer analysis by grades and classes of the situation as to food and sleep than it is possible to report in total in this short paper reveals that in those particular grades or classes in School A in which individual work with a majority of the pupils was carried on intensively by the Hiram House staff there was a marked improvement in diet and sleep.

Distribution of Enrollment as Evidence of Pupil Progress.—One evidence of progress in a school is the annual age-grade survey. Under present conditions in Cleveland, these figures are capable of analysis into (1) the percentage who are normal for the grade in which they are enrolled, and (2) the percentage not normal for the grade in which they are enrolled. The latter group may be further divided as follows: (a) under age, (b) overage, (c) major work or high I. Q.,[4] (d) ungraded Z, and (e) mentally defective.

[4] Major work pupils are selected from all schools in the city and transferred to the nearest major work center. School A has such a center. However, about two-thirds of the present enrollment of this center are from School A.

TABLE IV

DISTRIBUTION OF ENROLLMENT IN THE EXPERIMENTAL AND CONTROL SCHOOLS FROM AGE-GRADE ENROLLMENT REPORTS OF THE BUREAU OF CHILD ACCOUNTING 1934-1936 PERCENTS

	School A, Experimental			School B, Control		
Chronological Age	1934	1935	1936	1934	1935	1936
Normal	68.2	69.5	72.0	60.6	61.3	63.1
Aberr	31.8	30.5	28.0	39.4	38.7	36.9
Under Age	.4	.2	.4	.9	.9	1.6
Overage	2.4	2.5	2.2	7.2	4.9	7.1
Major Work	4.6	4.0	2.5	—	—	—
Undergraded Z and Mentally Defective	24.4	23.8	22.9	31.3	32.9	28.2

TABLE V

RANK ORDER OF INDOOR AND OUTDOOR PLAY ACTIVITIES MOST FREQUENTLY RECORDED BY BOYS AND GIRLS

Comparisons Are Made Between Schools

Percents are for four test periods

Activity	School A, Experimental Percent*	School B, Control Percent*	Difference in Favor of
Outdoor			
Unorganized games	28.4	20.9	7.5 A
Baseball	19.5	20.5	1.0 B
Organized games	12.2	14.9	2.7 B
Walking	4.9	6.6	1.7 B
Conversing and visiting	4.1	3.1	1.0 A
Played with toys	2.5	2.0	**
Bicycle riding	2.1	1.7	**
Auto riding	1.2	1.7	**
Indoor			
Reading	35.9	30.8	5.1 A
Radio	25.3	22.2	3.1 A
Unorganized games	6.6	8.9	2.3 B
Played with toys	4.8	6.2	1.4 B
Show	4.7	4.3	**
Construction and woodwork	2.8	6.0	3.2 B
Played with pets	2.6	3.9	1.3 B
Organized games	2.3	3.6	1.3 B
Imitative games	2.1	2.8	**
Played with cards	2.1	2.0	**
Drawing or cutting	1.6	2.6	1.0 B
Played with brother or sister	1.4	1.1	**
Observation	1.4	.6	**
Social functions	.7	.6	**
Dancing	.5	.8	**
Singing	.3	.2	**

* Percent of pupils engaging in the activity.
** Difference is less than 1.

TABLE VI

RANK ORDER OF MOST FREQUENTLY RECORDED INDOOR AND OUTDOOR ACTIVITIES RELATED TO THE CHILD PERSONALLY RECORDED BY BOYS AND GIRLS

Comparisons Are Made Between Schools

Percents are for four test periods

Activity	School A, Experimental Percent*	School B, Control Percent*	Difference in Favor of
Outdoor			
Fed pet	20.3	34.8	14.5 B
Went to library	26.9	25.9	1.0 A
Guard to school	12.0	14.4	2.4 B
Peddled papers	10.2	4.0	6.2 A
Went shopping	6.9	1.1	5.8 A
Earned money	5.5	5.0	**
Repaired bicycle	4.1	4.6	**
Indoor			
Washed hands and face	55.1	50.0	5.1 A
Combed and brushed hair	19.0	24.2	5.2 B
Cleaned teeth	11.8	11.6	**
Studied school lessons	3.7	1.8	1.9 A
Attended church services	2.3	3.4	1.1 B
Bathed	1.7	2.1	**
Practiced music	1.0	1.1	**

* Percent of pupils engaging in the activity.
** Difference is less than 1.

TABLE VII

RANK ORDER OF INDOOR AND OUTDOOR HOME RESPONSIBILITIES MOST FREQUENTLY RECORDED BY BOYS AND GIRLS

Comparisons Are Made Between Schools

Percents are for test periods

Activity	School A, Experimental Percent*	School B, Control Percent*	Difference in Favor of
Outdoor			
Errands	75.2	78.9	3.7 B
Miscellaneous	2.5	4.7	2.2 B
Indoor			
Washed and dried dishes	55.5	53.0	2.5 A
Washed dishes	34.6	31.8	2.8 A
Dried dishes	20.9	21.2	**
General housework	6.8	4.2	2.6 A
Took care of baby	6.3	2.8	3.5 A
Made beds	5.7	4.1	1.6 A
Swept floor	4.9	4.9	**
Cleaned table	4.8	2.6	2.8 A
Helped mother	4.5	3.5	1.0 A
Set table	2.9	2.6	**
Cooked	1.5	.8	**
Scrubbed floors	1.4	1.2	**

* Percent of pupils engaging in the activity.
** Difference is less than 1.

Interestingly enough, School A has a considerably larger percent of the population making normal progress through the grades, and more enrolled in the major work or high I. Q. groups than has School B. Then, too, there are hardly a third as many overage pupils in School A as in School B. As stated above, these facts present some evidence of better academic progress of children in School A. Since as appears by the averages of P. L. R.'s or I. Q.'s reported in Table VIII, it would appear that there is no substantial difference in average I. Q. as between the two buildings, this result is probably produced by the more intensive analysis and utilization of ability in the experimental school.

A low promotion rate and corresponding over-ageness has quite generally, for twenty years or more in Cleveland, meant higher average achievement, grade for grade, in the schools with the lower promotion rate. The results of standard educational tests in regular grades and classes in the schools included in this experiment, particularly in the upper grades, follow the pattern suggested by the age-grade table; that is, achievement is generally about as much higher in the regular grades and classes in the control school as is to be expected in the light of the lower promotion rate there. However, this is not always true. The experimental school sometimes leads, grade for grade, in academic achievement.

Recreational Activities and Work Responsibilities as Recorded in the Diaries.—More numerous per pupil participation in approved recreational activities and work responsibilities would be some evidence of better health, both physical and mental.

Again, the evidence of the diaries favors the experimental school, in the main, although the differences are not marked. Indeed, it would be difficult to maintain that, by themselves, they have any significance whatever. However, one difference favoring the control school stands out. Children there engage in more outside work for which they are wholly responsible; in other words, pupils left to their own devices seem to find some useful work to do.

Character Ratings Correlated with Intelligence.—Of the "volumes" of data collected and analyzed, the most significant are probably those which are summarized in Table VIII, following. The central fact in this table is that the correlations between intelligence and misbehavior, as measured on the Haggerty-Olson-Wickman Scale, remain uniformly high, from year to year and age to age, at School B; whereas at School A, they are gradually reduced to zero, that is, to magnitude insignificant in the light of the probable error.

TABLE VIII

BEHAVIOR RATINGS—HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCHEDULE
SCHOOL A AND SCHOOL B COMPARED JUNE, 1935, AND JUNE, 1936

	Age in Years								
June, 1935	5	6	7	8	9	10	11	12	13
Average, H-O-W Scale									
School A	—	—	—	—	71	65	67	72	—
School B	—	—	—	—	66	61	58	66	—
Difference of Averages	—	—	—	—	5.0	4.0	9.0	6.0	—
P.E., Dif. of Averages	—	—	—	—	3.3	2.7	1.9	2.9	—
Average P.L.R. or I.Q.									
School A	—	—	—	—	104	102	100	94	—
School B	—	—	—	—	103	114	106	97	—
r, H-O-W Scale and P.L.R.									
School A	—	—	—	—	—.23 ±.06	—.29 ±.05	—.18 ±.05	—.17 ±.07	—
School B	—	—	—	—	—.31 ±.15	—.35 ±.14	—.41 ±.09	—.53 ±.07	—
Difference in r's*	—	—	—	—	.08	.06	.23	.36	—
Number of Cases									
School A	—	—	—	—	136	152	141	90	—
School B	—	—	—	—	17	20	37	42	—
June, 1936									
Average, H-O-W Scale									
School A	61	66	69	73	68	64	65	77	82
School B	72	67	70	73	77	63	69	67	70
Difference of Averages	11.0	1.0	1.0	0.0	9.0	1.0	4.0	10.0	12.0
P.E. Dif. of Averages	3.2	3.7	3.9	3.6	3.6	3.4	1.7	2.8	4 3
Average P.L.R. or I.Q									
School A	103	96	112	112	109	102	114	96	91
School B	104	96	120	114	109	103	102	92	91
r, H-O-W Scale and P.L.R.									
School A	—.37 ±.06	—.25 ±.06	—.47 ±.05	—.50 ±.06	—.36 ±.05	—.33 ±.05	—.33 ±.04	—.16 ±.06	+.03 ±.14
School B	—.39 ±.08	—.58 ±.10	+.18 ±.13	—.28 ±.11	—.60 ±.06	—.71 ±.05	—.68 ±.04	—.47 ±.07	—.58 ±.09
Difference in r's*	.02	.33	.29	.22	.24	.38	.35	.31	.55
Number of Cases									
School A	85	104	114	83	157	149	192	114	24
School B	49	19	25	35	48	48	51	50	27

* Signs disregarded.

Stated simply, the data of this table indicate that in a good, average school, generally speaking, the brighter the pupils the better they behave (or the slower they are the worse they behave). This is the general tendency. However, in a school administered and taught as is School A, there is no significant relationship between intelligence and behavior.

In other words, the conclusion is that, under ordinary circumstances, the failure to adjust the load of work to the pupil's ability aggravates behavior difficulties; whereas, in the school where the load is carefully adjusted to the ability of the pupil, the school itself ceases to be a factor in producing misbehavior and becomes active and effective in the development of good social behavior, and hence, of character.

ONE READER'S CONCLUSIONS

These data suggest, but probably do not prove, the following:

1. Character, health, and citizenship seem to develop best when the load the child is called upon to bear is adjusted to his capacity. The load may be adjusted (a) by the use of intelligence and achievement test results, and (b) by discussing with the pupil his own successes and failures with reference to his present capacity.

2. Failure in any subject or phase of a subject may be reduced or all but eliminated by the establishment of small homogeneous study groups within the class.

3. Making the child conscious of standards of behavior in relation to his own reactions, as evidenced by a diary which he himself keeps, aids him to plan and keep to a course of action.

4. It is difficult to measure the depth and richness of the experiences and meanings which a child brings to his class work. However, the fact that School A has a larger proportion of children making normal progress through school, and also more working in high I. Q. or major work groups, would hint at the richness of life which the program of the school promotes.

5. Health, character, and citizenship traits, involving, as they do, not only knowing but also doing, must be viewed in the long range. Table VIII reveals development in the desirable behavior accumulating in the upper grades of the experimental school.[5]

[5] The numbered conclusions which appear here were drawn from the data presented above by Josephine F. Grainger, Director of Elementary Education, Allentown, Pennsylvania, without any explanation of the experiment other than that presented in the article itself.

AUTHORS' SUMMARY AND CONCLUSIONS

In general, these data suggest that, whatever the total experimental program carried on at School A is, in contrast to the program of a well administered regular elementary school of about the same size and character of population, the experimental program has proved to be more effective in providing for the uniform development of character and school citizenship, regardless of intelligence, than has the conventional one.

As noted above, literally "volumes" of data have been collected in the course of this study. While no one analysis of any part of the data of the study, taken by itself, is convincingly favorable to the experimental program, all analyses which have been made to date indicate, as do the data presented here, that the plan in use at School A is somewhat more favorable to the development of personality, character, and school citizenship than is the plan employed in one of the best traditional elementary schools in the city of Cleveland. This unanimity is in itself convincing. At least, it is convincing enough to indicate that the study should be continued and the techniques of observation refined until the answer is unmistakable. In the meantime, it would seem desirable to extend some of the features of the plan to other elementary schools both in Cleveland and elsewhere.

EYE-MOVEMENT TRAINING AS A MEANS OF IMPROVING READING ABILITY

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In his pioneer study of eye-movements in reading, Dearborn (1) noted that the fixations of good readers show more line-to-line consistency than those of poor readers. This led him to posit the concept of "short-lived motor habits" of the eye in reading. He further stated that the ability to acquire this "short-lived motor habit" was an important factor in reading ability. A survey of the literature on the topic of eye-movement habit (7) reveals several attempts by followers of Dearborn to set up eye-movement habits, through training exercises, and thus improve reading speed. All of these trials have apparently been rewarded with success as evidenced by increased reading speed. Conclusions are then drawn that the increased speed of reading followed causally from the establishment of more line-to-line regularity of fixation pauses, *i. e.* more habit.

Unfortunately, with the exception of the study by Robinson (6) none of these studies presents eye-movement data, and even this one fails to analyze in terms of habit itself. Moreover, none of them, again excepting Robinson, offers comparative data from groups given other types of training or no training at all. But while Robinson's monograph remedies some of these defects, it has others itself. In the first place, his training involved a number of irrevelant and confusing factors (7, 12). Moreover, since his training aimed at *reducing* the number of fixation pauses per line as well as making them more regular, he is not justified in drawing conclusions concerning the Dearborn habit concept which involves only the regularity feature.

The present brief experiment is aimed at comparing the results of training eye-movements themselves with training via mere motivated reading.

PROCEDURE

On the basis of Chapman-Cook Speed of Reading tests given in two classes of the course in How to Study, at the University of Minnesota, three groups were obtained of approximately equal score. The mean scores and the range of these three groups are as follows: Group I, 12.4 mean, 8-14 range (N = 10); Group II, 12.6 mean, 6-15 range (N = 9)*; Group

* The original number was 10, but one individual dropped out of school before termination of the training period.

III, 13.0 mean, 4-18 range (N = 10). Group I was to be the eye-movement training group and was composed of individuals from one of the two classes. Group II was to receive merely practice in reading more rapidly, and was drawn from the second class. Group III was the control (no training), and was composed of students from both classes. All 29 subjects were told that their scores on the Speed of Reading test were low and that it would be necessary to test them with the eye-movement camera (11). After this preliminary test with the camera, the students in Groups I and II were informed that they needed to improve their reading performance, and that training would be instituted.

A. NATURE OF THE PRACTICE

Two copies of the novel "Saints Progress" by Galsworthy were procured and broken into identical sections. One copy was marked for eye-movement training by the technique used by Pressey (5), *i. e.* points where it was assumed that the student should fixate in each line were indicated by a red pencil mark. The other copy was left unmarked.

Instruction sheets were drawn up to accompany each type of material. These instructions were drawn largely from the Pressey manual (5). Each individual in Group I was given a mimeographed sheet explaining the desirability of increasing reading speed, a brief discussion of the nature of eye-movements, and detailed instructions on how to read the material with the fixation marks. Moreover, they were given a page of horizontal lines with crosses for fixation points. This technique also derives from the Pressey manual. The first fifteen lines have crosses at either end; the remaining fifteen have these plus a third in the middle of the line. The students were told to go over this sheet, practicing the proper eye-movements and fixations, before each day's reading session. In other words, they were to practice fixating the crosses at the ends of the lines, and later in the middle of the line, striving to get the "swing" of the rhythmical eye-movements, and then go on to the practice reading material, which was likewise furnished with fixation guide marks. Furthermore, the students were strongly advised to do all of their regular reading and studying with the idea of making the same number of fixations per line of text.

Each member of Group II was also presented with an instruction sheet stressing the need of increasing reading speed, and stating that this could be accomplished by means of practice under the proper conditions of concentration and motivation. They were urged to force themselves to

read as rapidly as possible, to attend closely to the reading, to aim at deriving main ideas rather than every detail, and to suppress tendencies toward wandering thoughts. Also, as with the first group, they were urged to attack their ordinary reading and studying in the same way. No mention was made of eye-movements, and all of the work was to be completed before that topic was discussed in the How to Study course. Since the two groups were in different classes, there is little reason to suppose that they knew about the different forms of training. In fact, the students were not aware, as far as was observed, that they were taking part in an experiment. On the contrary, they were allowed to think that this training was a part of the general program of improving their study habits.

The training consisted of reading the practice material under the indicated conditions for 15 minutes each day. The whole training period lasted four weeks. The experimenter met the groups separately each week and made any explanations necessary, as well as endeavoring to keep the motivation. Both training groups were required to keep charts of their progress in reading day by day. This technique was thought to be a useful motivation agency.

At the end of the training period, all three groups were again tested before the camera. The material for both initial and final testings was taken from the same source as the practice material, and in each case a practice paragraph preceded the test paragraph. The test paragraphs were, of course, not marked with fixation points.

RESULTS

The initial and final test records were analyzed for the usual eye-movement measures—fixation frequency, regression frequency, perception time, and pause duration (Cf. 13, 14 and for an evaluation of these measures). Furthermore a measure of line-to-line regularity in fixation frequency was derived from the description of short-lived motor habits given by Dearborn. This measure is called the Habit Index (8). All of these data, together with the percentage improvement from initial to final test are given in the table.

It is important to notice at the outset that the three groups, although approximately equal on the Chapman-Cook Speed of Reading tests are not equal on the initial eye-movement test. This is unfortunate since it precludes the strict comparison of gains. For example, one might expect the lowest scoring group to show a higher percentage of gain merely because they are at that point of the performance curve where

gains are more easily made, that is, negative acceleration has not yet been reached. Group II is the best on the initial test, Group III second, and Group I the worst. This difference between groups holds for all measures except in the case of pause duration where there is a reversal. This is in line with much previous data relative to the inadequacy of pause duration as a measure of reading ability (4, 10, 15).

TABLE I

EYE-MOVEMENT DATA BY GROUPS.* INITIAL AND FINAL TEST RESULTS AND PERCENTAGES OF IMPROVEMENT

	Fixation Frequency	Regression Frequency	Perception Time	Pause Duration	Habit Index
Group I					
Initial Test	9.56	1.93	58.00	6.11	.374
Final Test	7.06	1.28	41.08	5.75	.555
Percent Improvement	26%	34%	29%	5.9%	48%
Group II					
Initial Test	7.96	1.17	49.63	6.22	.539
Final Test	6.48	.93	37.63	5.78	.644
Percent Improvement	19%	21%	24%	7.1%	19%
Group III					
Initial Test	8.41	1.28	51.94	6.05	.448
Final Test	8.40	1.36	52.50	6.25	.456
Percent Improvement	0.1%	—6%	—1%	—3.3%	2%

* Group I is the eye-movement training group, Group II, the motivated rapid reading group, and Group III the control (no training) group. Perception time and pause duration are given in 25ths second.

On the final test the groups show different relative standing. In the first place, Group III shows no gain whatever, and only insignificant losses in several of the measures. This is remarkable consistency for so small a group (10) over a period of four weeks, and gives some indication of the reliability of the eye-movement measures employed (Cf. 2). It also shows, of course, that what changes are found in the experimental groups cannot be due to mere growth, or to other factors which might vary with the passage of time.

Group I, the eye-movement training group, shows considerable improvement on most of the measures. Since the groups are so small that the more rigorous criteria of statistical significance would be meaningless, we must be satisfied with only percentage of improvement. The gain in pause duration is probably not significant, but is small in any case. The gain in habit index is rather large. This no doubt mirrors the conscious attempts of this group to make the same number of fixations per line in accordance with their instructions and training.

Group II, the motivated reading group, also shows considerable gains in all measures, with the possible exception of pause duration. However,

all gains are slightly less than those of Group I. This may be, as we have mentioned above, due to the fact that Group I was lower than Group II in the first place, and thus at that point where the curve rises rapidly. The two groups maintain their relative ranks even in the measure of habit index. On the other hand, the greater gains may be due to the fact that the type of training to which Group I was submitted may actually make for greater improvement. If this is true, we suspect that the reason lies in the greater ease of maintaining motivation with a novel situation, such as the marked text presents, then by merely being told to read more rapidly. The latter technique is psychologically bad in that it minimizes the poor reader's difficulty, and it offers him nothing in the way of devices for overcoming his difficulties.

The gain of the first group in habit index is much larger than the comparable gain of Group II and is probably a result of the special type of training administered. The same may be said for the greater improvement of the first group in regression frequency. Students who have been told and trained to make the same number of pauses per line and to read in a forward direction, might be expected to do this before the camera when it is only too obvious that their eye-movements are being photographed. In perception time, and probably also in fixation frequency, the two groups improve to about the same degree. And these two are the best measures of reading ability (9, 14). In other words the two training techniques are approximately of equal efficacy in improving reading ability.

The fact that Group I (eye-movement training) improved proportionately much more in habit index, and perhaps in regression frequency indicates only that they can follow directions to some extent. It should be noted, however, that their performance in this respect even after training (.555) is far from perfect. When every line of a paragraph is read with the same number of fixations, a habit index of 1.000 results. This proportionally greater improvement of Group I in habit index does not, however, carry with it a correspondingly greater improvement in reading ability. This is the important point. The sponsors of the habit doctrine and eye-movement training have claimed that if the fixation frequency could be made more uniform from line to line, the reader would improve in reading speed. This is true, obviously, only if the individual also makes *fewer* fixations on each line as well. The readers in Group I were, at retest, much more consistent in line-to-line fixation frequency, as is shown by a gain in habit index of 48 percent. But they had

not improved proportionally in reading ability. Group II on the other hand, with no mention made of eye-movements, improved to about the same degree as Group I in reading ability, and this improvement carried with it a corresponding increase even in habit index.

There remains the question of relative effects of the two types of training here employed on the degree of comprehension of the material read. If the readers in Group I are consciously endeavoring to space their fixations as they were trained to do, we might expect a consequent loss in the understanding of the text. Unfortunately we have only very inadequate data on this point in the form of ratings, perhaps quite subjective, of the quality and completeness of the reader's verbal reproduction. These figures, whatever their value, show a loss of 12 percent in comprehension for Group I, a gain of 7 percent for Group II, and a gain of 3 percent for Group III. Although more adequate evidence is necessary before framing a conclusion, these data are in harmony with Judd's (3) statement that such mechanical training is to be avoided, since it hinders the reader in his attempts to "reach the level of fluent, synthetic grasp of phrases."

In summary, it may be said that eye-movement training is no more efficacious, as regards reading rate, than mere reading with intent to improve; and it may, through directing the reader's attention to the mechanical processes of ocular movement, detract from the understanding of what is read.

Bibliography

1. Dearborn, W. F. *The Psychology of Reading.* Columbia University Contributions to Philosophy and Psychology, Vol. XIV, 1906, No. 1.
2. Eurich, A. C. "The Reliability and Validity of Photographic Eye-Movement Records," *Journal of Educational Psychology,* XXIV (1933), 118-122.
3. Judd, C. H. *Reading: Its Nature and Development.* Supplementary Education Monographs, 1918, No. 4.
4. Miles, W. R., and Segal, D. "Clinical Observations of Eye-Movements in the Rating of Reading Ability," *Journal of Educational Psychology,* XX (1929), 520-529.
5. Pressey, L. C. *A Manual of Reading Exercises for Freshmen.* Columbus, 1928.
6. Robinson, F. P. *The Role of Eye-Movements in Reading with an Evaluation of Techniques for Their Improvement.* University of Iowa Studies, 1933, No. 39.

7. Sisson, E. D. *The Role of Habit in Eye-Movements of Reading.* Ph.D. Thesis. University of Minnesota.
8. Sisson, E. D. Habits of Eye-Movement in Reading.
9. Tinker, M. A. "Eye-Movement Duration, Pause, Duration, and Reading Time," *Psychological Review,* XXXV (1928), 385-397.
10. Tinker, M. A. *A Photographic Study of Eye-Movements in Reading Formulae. Genetic Psychology Monographs,* III (1928), No. 2.
11. Tinker, M. A. "Apparatus for Recording Eye-Movements," *American Journal of Psychology,* XLIII (1931), 115-118.
12. Tinker, M. A. "The Role of Eye-Movements in Reading with an Evaluation of Techniques for Their Improvement," *Journal of Educational Psychology,* XXIV (1933), 555-556.
13. Tinker, M. A., and Frandsen, Arden. "Photographic Measures of Reading Performance," *Psychological Bulletin,* XXX (1933), 669.
14. Tinker, M. A., and Frandsen, Arden. "Evaluation of Photographic Measures of Reading Ability," *Journal of Educational Psychology,* XXV (1934), 96-100.
15. Walker, R. Y. "The Eye-Movements of Good Readers," *Psychological Review,* XLIV (1933), 95-117.

EDITORIALS

YOU'LL FIND YOUR PROBLEMS IN YOUR OWN BACK YARD

THESE remarks are directed to administrators, supervisors, and teachers who are committed to the problem-solving approach in reaching educational decisions. The theme is found in a popular song of some years ago whose refrain ran, "You'll find your happiness in your own back yard." The present discussion is prompted by the fact that many graduate students and field workers in education seem to think that most of our problems have been solved or else they have a "blind spot" for difficulties in their own school systems. This point of view causes many educational workers to look for thesis problems or field projects outside their own communities, thus overlooking the challenge of local issues.

This is a human tendency which has been recognized and described by poet and story-teller. In Hawthorne's story of "The Great Stone Face" the people, with the exception of Ernest, were all too ready to see in the returned wanderers—Gathergold, Old Blood-and-Thunder, Old Stony Phiz, and the poet—the likeness of the Great Stone Face. However, the truth was as the poet shouted, when Ernest spoke to the people from a natural pulpit at sunset, "Behold! Behold! Ernest is himself the likeness of the Great Stone Face," a resemblance which Ernest least of all granted or even suspected.

It was in Hawthorne's "The Great Carbuncle" that Matthew and Hannah, newly wed, sought the dazzling jewel in the company of the Seeker, the Cynic, Master Ichabod Pigsnort, Doctor Cacaphodel, the poet, and Lord de Vere, some of whom had even journeyed across the sea for the quest. After seeing the great red gem shining in the brow of the cliff above the enchanted lake, Matthew decided that, instead of its awful blaze, "The blessed sunshine and the quiet moonlight shall come through our window. We will kindle the cheerful glow of our hearth, at eventide, and be happy in its light."

Then there is the O. Henry story of the husband who sold his watch in order to buy his wife as a Christmas gift a comb for her beautiful hair, while the wife in the meantime was selling her hair in order to give

her husband a fob for his fine watch. Perhaps most striking of all is Lowell's "The Vision of Sir Launfal." The young knight who scornfully tossed the leper a piece of gold as he left the castle gate to seek the Holy Grail, returning old and broken after a fruitless search, found in this same beggar and the wooden bowl the object of his quest.

> "In many climes, without avail,
> Thou hast spent thy life for the Holy Grail;
> Behold, it is here,—this cup which thou
> Didst fill at the streamlet for me but now."

Nothing in these comments or the literary allusions cited should be construed as a prejudice against problems distant in time or space. The purpose is to impress on educational workers the desirability of devoting a reasonable share of time and energy to the identification and solution of problems in their own school communities. Illustrations from a specific area, educational diagnosis and adjustment,[1] will be given to render concrete the recommendation that the problems of individual school systems be studied more frequently and more thoroughly.

1. What are the various categories into which cases for educational diagnosis fall? Progress has been made in recognizing the subdivisions of the physically handicapped, as well as the mentally handicapped and talented, but diagnostic groups in certain newer instructional areas and the various types of social maladjustment, due to personality difficulties and behavior disorders, require further delimitation.

2. At what point does a given child become a subject for diagnosis and developmental or remedial treatment in one of the diagnostic categories—the mentally or physically handicapped, those who are maladjusted socially, morally, or emotionally, those who perform below their level of learning capacity, and others whose latent talents are never given expression?

3. What instruments and procedures are available in identifying cases for educational diagnosis?

4. How many children and youth fall in each diagnostic group—for a given school system, for a state, for the nation?

5. What factors are associated with the occurrence of defects and talents?

[1] Good, Carter V. "Problems and Techniques of Educational Diagnosis and Adjustment," *School and Society*, XLVIII (August 27, 1938), 261-67.

Scates, Douglas E. "What Can Research Contribute to Our Understanding of the Physically Handicapped?" *Journal of Educational Research*, XXXI (September, 1937), 20-28.

6. What results are associated with the presence of handicaps and special abilities?

7. What are the contributions of case histories and genetic studies to the work of educational diagnosis?

8. What preventive measures are available and usable?

9. What treatment for developmental and remedial purposes can be provided?

10. What are the best types of curriculum materials and teaching techniques for the various groups of children requiring developmental or remedial instruction?

11. What are the after-school history, the vocational opportunities, and the adjustments necessary for the different diagnostic groups?

12. What are the problems of organization, administration, finance, law, buildings, equipment, special classes, special teachers, clinics, supervision, etc., for the given school system or state?

13. What is the local history of the successes and failures of the past in dealing with problems of educational diagnosis?

At the beginning of a new school year this analysis of problems in an important educational area presents a challenge which will be accepted by some workers. It is urged that administrators, supervisors, and teachers more interested at present in other problems of the school community analyze such issues into their constituent elements so as to plan an intelligent and immediate attack.

CARTER V. GOOD

SCHOOL ACTIVITIES IN RELATION TO CHILD LIFE

IT is the purpose of this editorial to raise the question of the source or sources of ability to do the work provided from year to year by our school curriculums. This question of a growing mental ability is now leading to several very extensive studies by educational psychologists. One such study is under the direction of Dr. Arnold Gesell in close connection with the medical school of Yale University. This study begins with the child life at the age of two weeks, and observations have now been carried on for many children up to the age of two years. The mass of facts obtained from the observable physical reactions are recorded in photographs and descriptions. The work of this study is carried on under the name of the Institute of Human Relations, and as yet only the one scientific fact is definitely accepted that infants have the distinct charac-

ter of human beings from the very beginning. This fact indicates that the observable reactions of these many individuals during the first two years of life, can be distinguished in relation, not only to physical growth, but also to the effects of mental and of fellowship activities. To what age of mental and fellowship development can such an absolutely objective study be used to trace the action of those sources of human development which we believe result in a self-determined citizenship is, of course, to be discovered from such careful observations of child life.

AN INSTITUTE OF HUMAN RELATIONS IN SCHOOL ACTIVITIES

Beyond the strictly objective study of infants up to two years of age, there probably is the period of about four years during which there is a development of the oral language relation. The study of this phase of child life may need to include a wider fellowship relation.

At about six years of mental age the mind becomes actively conscious of the fact that reading and writing are used by other minds as a means of communication through the seeing of word symbols. It is with the development of this means for a wider association with one's fellows that the educational activities of school life begin. A wide experience of this development for children in the school situation indicates advantages in the school organization which warrant the most careful study of this objective educative situation in its relation to the active source in the growth of mental consciousness upon which this particular development depends.

An Institute of Human Relations in School Activities would be a clearing house for the constructive experiences of teachers, supervisors, and of students of school activities in their nurture of the active mental energies. Such energies act as an *interest* to hold attention to relations that are discovered in the present consciousness of the children and thus provide for the action of a *directing insight* by each pupil, which insight suggests the wider relations brought within reach by an organized study. The experiences suggested by the directing insight are efforts to gain more knowledge or to reach a clearer understanding of what is already partly learned. In the above statement of the research problem two mental energies are recognized, but in their relation to school activities the energy of *interest* acts to hold the attention of consciousness to a possible action of the *directing energy* of an insight for the outcome of a series of experiences of organized study by which a body of knowledge is to be obtained.

This school situation is very apparent in the instructional experiences for the mastery of arithmetic. The language of numbers used to express the relations of size by definite artificial symbols for quantities and for the operations by which they are combined, is not a part of the child's common experiences with his fellows. Only a very few names for numbers and a few experiences in separating or combining some groups of things are acquired before the school years. In learning to read the new situation makes it necessary to learn the sight symbols for a familar spoken language. Insight has already given the fellowship meanings of language as a whole. For arithmetic, the child's experience with the need to combine the strange number symbols is almost a blank page. He must learn the conditions from many experiences which give meaning to the need for arithmetic. To do this calls for a new interest which will hold attention to many experiences, all of which will be guided by an active insight seeking a meaning to be accepted as knowledge only when the use of an organized system of numbers is understood and the way toward a use of the number language is mastered.

A central clearing house by which to coördinate the direct study of school situations made by school workers and by research investigations should seek to discover what and how a very direct knowledge of the growing life of physical, mental, and fellowship abilities can contribute to a needed method of instruction. Here is a definite field which is outlined in a way to suggest the direction, character, and limits toward which the investigations can be directed. This field, centered as it is on the growing abilities of child life, is as essential to the methods of instruction as is the research study of attainment from the study of textbooks and of ways to use them. However, the two fields are needed to cover a fuller knowledge of education.

A fundamental situation in this newer research field is the activity of thinking ability as it develops, from spontaneous physical responses to recognized companionship relations, toward consciously directed union of ideas and of understood means and purposes of fellowship in a progressive common life. In this situation a recognized difficulty is the fact of very wide differences between individual developments in the order and amount of the expected growth of fellowship relations, and of abilities to relate the ideas from experiences in a way to secure a wider understanding of the use of new knowledge to organize the old for further progress with others. Such difficulties, however, make it necessary to find the facts from a study of the group situation, as it exists in the schools, by which to interpret the study of each individual.

GEORGE A. BROWN

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

GARRETT, HENRY E. *Statistics in Psychology and Education.* Second Edition (New York: Longmans, Green and Company, 1937), pp. xiii + 493. $3.50.

Because of his high opinion of the first edition of this treatise, the reviewer approached his task with a distinctly favorable bias, expecting this to be even a marked improvement over that. On the whole he was not disappointed in so far as the larger aspects of the work are concerned, but did find more points, mostly relatively minor, which appear to be susceptible of improvement than he had expected.

The style of presentation is, in general, quite clear and the usually full explanations, with examples and many tables helpful in computation and interpretation, should be understood by any reasonably well qualified student. One of the best illustrations of good examples is in Chapter VI, which deals with uses of the normal curve. Moreover, the content is, with a few exceptions, well selected in view of the purpose of the volume, to enable workers in the fields of Psychology and Education to employ and interpret statistical measures and procedures in their problems. The volume appears to be relatively free from errors in English and misprints, the former of which especially occur all too often in the writings of workers in this field.

One point in which the first edition is superior to the second is in its treatment of scores, which is psychological rather than mathematical as in the second. It is not true, as Garrett states, that a score of 150 on Army Alpha represents the interval from 149.5 to 150.5, since a subject has to have fully 150 elements correct to receive 150 as his score, not merely 149 and half of another. There are, of course, measurements of which this is true, but so many of those made in Psychology and Education are not of this kind that the reveiwer cannot agree with Garrett's handling of the matter.

Among the major omissions are sets of problems without answers given as well as those with them; the inclusion of abbreviations and symbols in the index, thus rendering it difficult for the individual who does not know what they represent to find them; the median deviation, with consequent misuse of the term "probable error"; the 10-90 percentile range; the smooth curve as well as the histogram and polygon; and recognition of the difference in converting positive and negative R's (foot-rule correlation) into r's. Minor omissions include further bases of determining classes; other methods of smoothing and of determining skewness; recognition of the fact that cumulative tables and graphs may be in either direction; statement of conditions under which "T"-scores from different tests are directly comparable"; and putting formula (67) on p. 304, that on p. 317, and (77) on p. 323 in more conveniently usable form.

The book contains a number of inaccuracies, some of which are due to efforts to simplify. There is confusion in dealing

with Q and P E; the formula for the mean deviation is only approximate, but this is not stated, moreover the exact one is not a great deal more difficult; the graphs in Chapter IV fail to have their baselines broken at the left where they do not extend to zero; it is not "necessary to change cumulative f's into cumulative percents" to plot an ogive, as is stated on p. 82; upper class limits are sometimes poorly given as the same as the lower limits of next higher classes; allowing the term "T-scale" to be applied to other than groups of twelve year olds is of doubtful validity; formula (25) on p. 192 contains extra terms; the words "sure" and "certain" are repeatedly used with reference to chances that are large, but not infinite and therefore not properly so described; that "a correlation of .99 differs from a correlation of .95 by as much as a correlation of .71 differs from one of .01," as stated on p. 283, is at least doubtful; the discussion on p. 330-31 falsely states that a reliable test must be valid—indeed a perfectly reliable test may have zero validity; on p. 354 "variance in weight is constant" should read "zero" for "constant"; and the second sentence on p. 409 is only sometimes true, depending upon the purpose.

In a few cases Garrett has departed from usual symbolism without apparent advantage in so doing. Examples are the use of Mdn instead of Mn for median, of the subscripts *g* and *l* instead of *a* and *b* for classes above and below the mean or median class, and omission of the subscript *1.2* or *x.y* for an error of estimate. Also his reference to the formula for p as the rank-difference formula appears to exclude that for R, whereas both are usually so included.

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THOMSON, J. ARTHUR. *The Outline of Science: A Plain Story Simply Told* (New York: G. P. Putnam's Sons, 1937), pp. lxi + 1220. $3.95.

DANTZIG, TOBIAS. *Aspects of Science* (New York: The Macmillan Company, 1937), pp. xi + 285. $3.00.

BARNES, HARRY ELMER. *A History of Historical Writing* (Norman: University of Oklahoma Press, 1937), pp. x + 434. $3.50.

INGLES, MAY, and MCCAGUE, ANNA. *Teaching the Use of Books and Libraries: A Manual for Teachers and Librarians.* Revised Edition (New York: The H. W. Wilson Company, 1937), pp. v + 207. $1.80.

MODLEY, RUDOLPH. *How to Use Pictorial Statistics* (New York: Harper and Brothers, 1937), pp. xviii + 170. $3.00.

These books are grouped together because of their implications for the methodology of research, although each deals with a different phase of or step in research. None of the volumes was written with educational workers directly in mind, although all deal with problems of importance in educational investigation. Familiarity on the part of research workers in education with investigational procedures in other fields is especially important because of extensive borrowing of both materials and methods from such areas. In the process of adapting research methods from other sciences, education has rather tardily recognized the difficulties involved in transferring bodily the exacting techniques of the physical sciences, and is now gradually formulating the research methods of the social sciences into an increasingly coherent pattern.

Thomson's *Outline of Science*, orig-

nally published in four volumes, is now complete in one large volume. The purpose is "to give the intelligent student-citizen . . . a bunch of intellectual keys by which to open doors which have been hitherto shut to him, partly because he got no glimpse of the treasures behind the doors, and partly because the portals were made forbidding by an unnecessary display of technicalities" (p. 5). Thomson agrees with John Dewey's statement in hoping that his book will contribute to individual development of the scientific way of looking at things: "The future of our civilization depends upon the widening spread and deepening hold of the scientific habit of mind" (p. vi.) Although the general merit of the volume is high, for the time span covered, many of the sections are years behind current developments in the fields represented, due to the fact that revisions have not been made and references have not been added since the first copyright date, 1922. The chapter on the science of the mind refers to psychoanalysis as the new psychology, with great emphasis on the work of Freud and no mention of Gestalt psychology; the latest reference cited in this field was published in 1922. The chapter and bibliography on psychic science, by Sir Oliver Lodge, cite no publications later than 1920, and of course make no reference to the work of Rhine at Duke University in the area of extra-sensory perception. The reader may picture for himself what is left untold in the discussions of wireless, electricity, radio, flying, etc. On the other hand, the concluding chapter on science and modern thought is as up to date in 1938 as when originally published in 1922.

Dantzig's *Aspects of Science*, by a professor of mathematics, is an abstract, philosophical discussion with the following central theme. "Science itself may be viewed as man's supreme effort to find himself in that perplexing pattern which he calls Nature. Have three centuries of uninterrupted scientific and technical progress brought man nearer to the goal? Has he succeeded in achieving some measure of harmony with Nature? Or has he merely managed to transfer to Nature the irreconcilable duality within himself?" (p. 116). Some of the fundamental conceptions (past and present) of science as analyzed by the author are: the principle of causality or scientific determinism; appeal to reason; inductive inference, observation, and calculation; relation of mathematics to the exact sciences; the conception of infinity; rigidity, uniformity, and simultaneity; space and duration; and matter, force, and motion. The volume is far from easy reading, even though it presents a variety of illustrations from the field of science, including mathematics. A parallel between scientific and religious faith is emphasized throughout the book.

Barnes's *History of Historical Writing* apparently is the first of its particular kind in any language, being essentially a history of history itself or a survey of the development of the art and science of historical writing from the age of the picture-writers to the present time. The author's procedure is to characterize the intellectual background of each major period, to show how the historical literature of each era is related to its parent culture, to indicate the dominant traits of such historical writing, and to identify the individual contributions of the chief writers of each period. He believes this method superior to individual literary essays on a group of historians or to an encyclopedic bibliography of historical writing. Fifteen chapters proceed from the origins of historical writing through the works of the Greeks and Romans, the early Christians, and the Middle Ages to the beginnings of critical historical

scholarship and to the present. History of today is viewed not only as a record of things of the past, but also of how they have developed; it is expected that this knowledge will aid in understanding the present and in planning the future. This is an important contribution for all who are interested in history and the history of education.

Ingles and McCague's manual is intended primarily for teachers and librarians who give library instruction in high school, although some suggestions have been included so as to make the book adaptable to the elementary and college levels. The teaching methods and devices were compiled with the assistance of many different schools, teachers, and librarians. The topics covered include: principles of library instruction, the library and its arrangement, the book, card catalogue, dictionary, encyclopedias, reference books, magazines and indexes, book lists, bibliographies, and note taking. Selected references accompany each chapter. Sample tests covering the units of instructions and an extensive bibliography make up the appendix. This completely revised edition promises to be even more useful than the original 1930 edition.

Modley treats pictorial statistics in relation to: the service rendered, grammar of the picture language, symbols, color and shading, title and legend, explanatory pictures, sources of statistics, maps, pictorial diagrams, production and reproduction, history of the method, other graphic methods, use in schools, and exhibits and museums. Seventy-six illustrations accompany the discussions of principles. Although the selected bibliography, beginning with 1931, and the illustrations are drawn from sources almost entirely outside the field of education, the principles can be applied wherever pictorial and graphic representation is needed in the presentation of educational data.

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CARTER V. GOOD

MINOR, RUBY. *Early Childhood Education: Its Principles and Practices* (New York: D. Appleton-Century Company, 1937), pp. xix + 763. $3.00.

This very comprehensive study of Kindergarten-Primary education was written primarily as a textbook for teacher training institutions and also as a practical aid to teachers in service. The author states that she hopes by means of it to clarify some of the misconceptions which have arisen as to the usefulness of the school subjects in realizing the newer values of the activity or experimental program.

The book is divided into four parts. Part I treats of the history of the kindergarten, the nursery school, the unification of kindergarten-primary grades and the general objectives to be attained during these early school years. Part II deals especially with the part which purposeful activities and experiences play in bringing about growth and development of children. Part III has to do with the organization of experience with reference to subject matter—health, social studies, nature experiences, reading, handwriting and other phases of the curriculum, all of which, says the author, are a real part part of the child's experience. However, developing them in separate units and in detail as she does she sometimes forgets to make them a part of the child's real experience and teaches them formally and occasionally with the use of out-worn devices. Part IV contains many helpful suggestions concerning the qualifications and responsibilities of the teacher, the keeping of records and reports, and the selecting of equipment and supplies.

Throughout the book the author quotes

freely from recognized authors and seeks to gain a basis for her principles and procedures from recent research and scientific investigations. By reviewing so large a number of these studies and by emphasizing the importance of making use of scientific findings in school room procedures she has rendered a real service to kindergarten-primary teachers.

On the whole her statement of principles is modern and sound, much more psychologically sound than many of her detailed procedures for carrying out these principles. There are inconsistencies in her attempts to meet the age level of the young child to provide for his continuous growth. Several of the records of group units carried out in the Kindergarten show entirely too much organization and finish for five-year-old children and are developed in too careful detail with undue teacher guidance. Many of the curriculum suggestions made for kindergarten belong further along in the primary grades as a study of Indians, of Hiawatha, and Eskimos as well as many of the traditional folk dances and organized games.

However in spite of occasional inconsistencies the book is modern in purpose and in outlook with many suggestive and helpful developments of principles and activities. Her extensive bibliography of books and articles at the end of each chapter is a valuable contribution.

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HENDERSON, ELISHA LANE. *The Organization and Administration of Student Teaching in State Teachers Colleges.* Contributions to Education, No. 692 (New York: Bureau of Publications, Teachers College, Columbia University, 1937), pp. vi + 125. $1.60.

MOONEY, EDWARD S., JR. *An Analysis of the Supervision of Student Teaching: A Study Based on the New York State Teacher-Education Institutions for the Preparation of Elementary School Teachers.* Contributions to Education, No. 711 (New York: Bureau of Publications, Teachers College, Columbia University, 1937), pp. vii + 159. $1.60.

Dr. E. L. Henderson's doctoral thesis at Teachers College, Columbia University is the *Organization and Administration of Student Teaching in State Teachers Colleges* (1937). Dr. E. S. Mooney, Jr.'s theses at the same institution is *An Analysis of the Supervision of Student Teaching* (1937). The first study included data from 37 state teachers colleges in 22 states. Mooney's study was limited to institutions training elementary teachers in the State of New York. Both are survey studies. Both attempted to evaluate conditions found and recommend improvements.

Henderson used a combination of visits to the colleges, conferences and questionnaires. Data were obtained from college staff members and from student teachers. By comparisons of his data with data found in earlier studies, changes were discovered. He found that there "was almost unanimous agreement that the organization and administration of student teaching was not done as those most closely connected with its direction would have it done." Both investigations included criteria established either by judgment or by opinions of writers in this field, which criteria were used as means of making evaluation.

Henderson found that several of the weaknesses reported years ago are still all too much in evidence. Among these are (1) the lack of advanced specialized preparation of staff workers in laboratory schools, (2) an overload of work for

these staff members, (3) discriminations, as of yore, as to faculty recognition as to rank, etc., (4) unorganized character of individual conferences, and (5) weaknesses in conduct of observation of teaching.

The more intensive study by Mooney shows that student teaching as in the past does not include experiences in all phases of the teacher's work; that supervision often yet emphasizes the routine factors in teaching to the detriment of those phases concerned with constructive thinking and teaching; that in off-campus schools, there are weaknesses in supervision which are greater than in campus schools.

Both studies are constructive in that they present a series of recommendations for improvement of conditions. Both studies show that the writers make very good use of the literature in our country dealing with this work, and include representative bibliographies.

The writer notes that several of the conditions needing improvement are those revealed in the study of the Missouri Normal Schools as early as 1914; that all three investigations concerned the state teacher training institutions. It is his belief that the writers both overlooked the one thing needed to remedy the situation and that is some new administrative heads, or a change in attitude of such heads, so that more emphasis will be placed upon doing the things needed to improve our laboratory schools rather than the annual speeches of the American Association of Teachers Colleges praising the training school as "the heart of the institution." The writer hopes that these two studies will be read by many of our teachers college administrators and that some changes will result.

The materials in Mooney's study are very helpful for supervising or critic teachers in setting up conceptions of work, needed practices and principles involved in it.

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CUFF, NOEL B. *Child Psychology* (Louisville: The Standard Printing Company, 1937), 299 pp. $2.50.

If the sales of a textbook are determined primarily by the areal base of "consumer appeal" Cuff's *Child Psychology* should attain the status of a best seller, for he has not failed to invoke the hardy and perennial prejudice in favor of "a *practical* (italic ours) scientific treatment of the characteristics and activities of children" nor to reassure his readers that he will steer a middle course "between the extremes of giving an uninteresting encyclopedic summary of laboratory research and of presenting generalizations without adequate experimental foundation." Nor is the eclectic appeal of a disregard of any one "school" or "brand" of psychology overlooked. In addition to these true-and-tried sales cliches the author offers the first text in child psychology in which the organization and content have been determined, in large part, by the latest device to elicit consumer approval, namely, the decision of such matters by majority vote of students and teachers of elementary work in the field.

The author believes that this procedure is "an attempt at an improved organization of the usual content of child psychology" for "the fact remains that mass opinions of people who have taught and who have studied the subject should be more valid than the personal opinions of any one author who may have 'an axe to grind.'"

Cuff's questionnaire results revealed that the number of chapters "should be limited to fifteen to conform to what teachers and students consider a desir-

able number of units.'' These, in sequential order, are: methods and objectives of child study; heredity and environment; the development of the infant; growth and development; incentives and motives; emotional development; and integrated child; the nature and function of play; language development; the learning process; the development of meanings; imagination; thinking, reasoning and problem solving; the measurement and prediction of individual differences in mental ability; socialization and guidance.

From this table of contents it would seem that our not too sanguine hope for an improved organization of the data of child psychology must die still-born. Indeed, as logically might be anticipated, we have, after all, only the usual melange of topics with sketchy, if any, longitudinal unfolding of development within a topic. In short, the text is not integrated in terms of the development of the human organism but rather in terms of a rudimentary mental hygiene for parents. Thus, to cite a conspicuous example, more space is devoted to ''thumb-sucking'' than to all of motor and postural development in early infancy! And nothing of consequence is said about the characteristics of the normal sucking response of the infant!

Aside from the defect of meager numbers the author's references are usually to outstanding studies or to well-known authorities in their respective fields so that the text is quite free from the misinformation so typical of popularizations. There are, of course, a number of minor errors, ambiguities and careless statements such as the following:

''the sperms of spermatozoa''

''the big bad behaviorists then sent these instincts to the junkyard for outmoded psychology and argued that all behavior is conditioned or built in at any early age''

''It has been known for a long time that the plantar reflex, more recently called the Babinski reflex . . .''

''It usually has been admitted, however, that reflexes are not a valid index to general mental ability until they have at least a month for maturation and integration''

''there is some evidence that mental diseases among children, as well as among adults, are increasing. Data, for instance, given in the United States Census Reports show that the number of patients between the ages of ten and fourteen in hospitals for mental diseases increased between 1910 and 1920 and also between 1920 and 1930.''

With the exception of a tendency to ride anecdotes and the apparent acceptance of the glib assurances, on the part of educational philosophers, as to our future of ''leisure'' the author evidences a commendable skepticism and at times a delightful irony as when, after contemplation of the pre-occupation of the cinema with LOVE and a similar incidence in songs purveyed by the radio he says:

''In fact, before one finds a program that does not have a predominantly sexual theme, he is likely to start singing 'Boo-hoo you've got me crying.''

Likewise, to be appreciated is the following bit of realism from the chapter on ''Socialization'':

''When a child makes his debut by birth into society he comes in contact with others of his own kind and as a result of his social experience he learns the language, folkways, and manners of his associates and orients himself with reference to the patterns of civilization which they embrace. If born in Rome, he soon does as the Romans do. He must even accept the rules, principles, and standards of the best groups to avoid being called socially maladjusted or unsocialized.''

In conclusion, the reviewer commends this book to the attention of those whose background is literary rather than scientific. It should prove ideal material for Child Study groups and for those parents who lack the background of general psy-

chology necessary for the study of developmental psychology.

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SCHEIDEMANN, NORMA V. *The Psychology of Exceptional Children. Volume II* (New York: Houghton Mifflin Company, 1937), pp. xii + 460. $3.25.

This is the second volume of the same title by Scheidemann. Some of the topics summarized and interpreted in the first volume (1931) were: speech disorders, feeble-mindedness, psychopathy, deafness, blindness, and delinquency. The present volume has chapters on the nervous system, birth-injury, post-encephalitis, enuresis, albinism, pre-schizophrenia, puberty praecox, premature birth, bilingualism, eideticism and congenital syphilis. The material for each topic is similarly organized. There is, first, a brief historical account, with statistics of incidence; then there are sections on etiology, symptoms, diagnosis, prognosis, treatment, case studies. Dr. Scheidemann has selected her topics wisely and has, also, sampled the materials for each topic judiciously, often unearthing medical knowledge relevant to psychological therapy. The bibliographic citations are adequate, although by no means exhaustive.

The book is not a classical presentation. The topic materials, though consistently classified under convenient rubrics, are not well integrated. Confusion rather than illumination results from the many statistical references. The book would have been easier reading had there been less emphasis upon statistical orientation and more on logical presentation of facts and hypotheses. Moreover, in attempts to be both instructive and scientific, Dr. Scheidemann's contribution oscillates between a really good text and a tolerably scholarly review. Scientific precision is appreciably handicapped by clinical generalities. As an instance of this is her comment on introversion-extraversion: "The concept of introversion-extraversion, like most other psychological concepts, has been challenged and questioned. On the whole, however, its existence may be accepted partly on the basis of authority and partly because of the evidence of life experiences, which seems to indicate the plausibility of the concept." Whose authority? Whose life experience?

In the opinion of this reviewer, the title of the book is not particularly appropriate, since the book is a compendium not only of psychological but also of medical knowledge. The pediatrician and the psychiatrist, as well as the psychologist, could lay claims to the field. But what other title could have been used? There is as yet no term to describe the borderline zone between medicine and clinical psychology.

In spite of the criticisms raised in this review, Dr. Scheidemann has given us a volume which, like her first contribution, is a valuable textbook for teachers who are interested in helping exceptional children. Clinical psychologists, also, will find it sufficiently detailed and substantial as a reference source, especially useful as an adjunct to Louttit's recent *Clinical Psychology.*

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BRYAN, ROY C. *Pupil Rating of Secondary School Teachers.* Contributions to Education, No. 708 (New York: Bureau of Publications, Teachers College, Columbia University, 1937), pp. vi + 96. $1.60.

That the learner's attitudes condition what is to be learned is widely assumed.

It is also widely assumed that the classroom teacher is the most important single item in the pupil's formal educational environment. If these two propositions are true, given the scientific approach to educational problems that prevails, the appearance of the study under review is not to be wondered at. The occasion for wonder is perhaps that a device specifically for pupil rating of high school teachers should not have appeared sooner—some dozen years after a similar device attained rather extensive use chiefly at the college level.

The intervening period, however, saw considerable work of a more or less scientific character concerned with the relatively non-intellectual factors operating in the educational situation. The social-psychological concept of *attitudes*, for example, has become in that time one of the major concepts in social psychology, and while in this study the literature directly related to pupil rating of teachers is competently reviewed, it seems to this reviewer that a broader theoretical base might have been given the study by bringing the literature on attitudes to bear upon the specific problem attacked. Ratings of the sort here in question rather obviously fit into the category of verbalized attitudes.

Within the limits set by the author for his problem—and doctoral theses must necessarily be limited!—the study is done with workmanlike competence and healthy appetite for statistical mastication of the data. The eleven items of the rating device are subjected to a very thorough chewing-over and to change the figure, are studied not only for their chemical affinities with each other but also with other factors such as pupil's mental ability, marks received by pupils from the teachers rated, and the sex of pupils and teachers. The results obtained are only slightly at variance with similar investigations at the college level. The agreements are much more impressive than the divergencies. The fact that the basic data were obtained in larger urban schools from 900 junior high school pupils and 600 senior high school pupils may make the norms as determined somewhat unrepresentative of the country as a whole.

The major contention, however, that a new and useful instrument has been provided by means of which the teacher can obtain insight into their pupils opinions concerning them can well be made and maintained. To what extent administrators and supervisors may wish to use such an instrument in at worst obtaining a systematically organized sample of pupil gossip about teachers and at best a valuable supplement to the process of arriving at that very mysterious and esoteric entity known as the teacher's success grade—to say nothing of in-service training and improvement of teachers—had probably better be left to their wisdom and insight. The study can be heartily recommended for reading to both teachers and administrators. To teachers who feel themselves psychically not too insecure to face realities the rating device will be a welcome addition to their professional armamentarium for self-improvement. To administrators sufficiently wise and tactful it offers a diagnostic tool enabling prescription likely to improve the pupil-teacher relationship and hence produce desirable changes in pupils. But every new invention has its dangers. In the hands of administrators not sufficiently wise and tactful the rating device can become gravely destructive of the morale of the teaching staff.

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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

ADE, LESTER K., and OTHERS. *Salaries of School Employees, 1936-1937*, Research Service in Education, Circular No. 6 (Harrisburg: Department of Public Instruction, Commonwealth of Pennsylvania, March, 1938), 19 pp.

The data gathered from Superintendents' Annual Reports regarding the salaries paid to teachers, supervisors, and principals employed in the public schools of Pennsylvania during 1936-37 tended to show that salaries are changing upward, but at the rate somewhat below that prior to 1928.

CARR, WILLIAM G., and OTHERS. "From High School to College," *Research Bulletin of the National Education Association*, XVI (Washington: National Education Association, March, 1938), 59 pp.

Topics discussed are the quest for further education, guidance with respect to college entrance, entrance requirements and admission procedures, introducing the student to college life, the freshmen curriculum and methods of teaching, the guidance and supervision of college freshmen, use of records in freshman guidance, coöperative attempts to improve articulation between high school and college, and a summary of current guidance practices affecting college freshmen. Bibliography.

CHARTERS, W. W. (Editor). *Educational Research Bulletin*, XVI (Columbus: School of Education, Ohio State University, September 15, 1937), 47 pp.

This bulletin contains articles on state school administration, physical education as applied to social science, and on parents and the purposes of the school.

DAWALD, VICTOR F. *Commercial Education Practices in Fifty-Two Large Secondary Schools of Illinois, Indiana, and Wisconsin* (Beloit, Wisconsin: Beloit Public Schools, March, 1938), 8 pp. (Mimeographed)

This bulletin contains the findings of a normative-survey on existing commercial practices in large secondary schools of Illinois, Indiana, and Wisconsin analyzed on the basis of subjects offered, time devoted to each subject, credits granted, required and elective, interrelation existing between typing and shorthand, and emphasis on skill, non-skill, and social commercial subjects.

EELLS, WALTER CROSBY. *Bases for a New Method of Accrediting Secondary Schools*. Reprinted from *The Educational Record Supplement* for January, 1938 (Washington: American Council on Education, 1938), 31 pp.

This report, which is concerned with one phase of the coöperative study of secondary school standards, is a discussion of the underlying bases for the accreditation of secondary schools from the standpoints of the faults with the present methods of accreditation, guiding prin-

ciples for the development of a new, and improved method of accreditation, and concrete procedures which can be used for this new and improved method of accreditation.

ELLS, WALTER CROSBY (Coördinator). "Educational Temperatures," *Bulletin of The Coöperative Study of Secondary School Standards* (Washington: Coöperative Study of Secondary School Standards, April, 1938), 24 pp.

This bulletin is composed of a series of thermometer scales designed to show comprehensive data gathered from the two hundred schools which participated in the Coöperative Study during 1936-37.

FERRELL, THOMAS. *Relation Between Current Expenditures and Certain Measures of Educational Efficiency in Kentucky County and Graded-School Systems* (Nashville: George Peabody College for Teachers, 1936), pp. xiii + 114.

The author studied the county, the independent graded-school and the city districts of Kentucky in an attempt to determine the relationship between expenditures and efficiency over the five year period, 1931-1935 inclusive. Using as measures of efficiency the attendance, holding power, preparation of teachers, experience of teachers, teacher-pupil ratio, and length of school term the data seem to indicate marked differences between expenditure ranks and efficiency ranks in both types of school systems and to present a need for further investigation.

HARTOG, SIR PHILIP. *A Conspectus of Examinations in Great Britain and Northern Ireland* (London: Macmillan and Company, 1937), 182 pp.

This bulletin, designed to give a general view of the field of knowledge covered by the examination system in Great Britain and Northern Ireland, is divided into eight parts discussing the Free Place Examinations, the main secondary examinations, the university examinations, procedures employed in examining, and examination authorities for seventy-six fields.

LEARY, BERNICE E. *Classification List of Courses of Study, 1934-37*, Reprint of Part IV of Bulletin 1937, No. 31 Washington: Office of Education, United States Department of the Interior, 1938), 120 pp.

This bulletin presents three tables listing 1,660 courses of study and other curriculum materials that comprise the current collection on file in the library of the Office of Education.

NOFFSINGER, F. R. "State Rules and Regulations Governing Safety Education in the United States," *Bulletin of the American Automobile Association* (Washington: American Automobile Association, October 15, 1937), 30 pp.

A report of a questionnaire survey of laws, state regulations, state courses of study, and state required teacher training in the field of safety education in the forty-eight states and the District of Columbia.

RATHS, LOUIS E. "Evaluating the Program of a School," *Educational Research Bulletin*, XVII (Columbus: School of Education, Ohio State University, March 16, 1938), 27 pp.

This bulletin is devoted to a report of an extensive testing program with its implications regarding pupil development and curriculum efficacy.

SIMPSON, ALFRED D. (Chr.), and OTHERS. "Finance and Business Administration," *Review of Educational Research*,

VIII (Washington: American Educational Research Association, April, 1938), 107 pp.

This bulletin discusses finance and business administration as these aspects pertain to: the support of education; financial planning; financial implications of school organization; budgetary procedure; accounting, educational costs and their analysis; financial reporting; salary scheduling; insurance, purchasing, and stores management; the federal, state and local support of education. Bibliography.

SMITH, G. MILTON. A Simplified Guide to Statistics (New York: Farrar and Rhinehart, Inc., 1938), 70 pp.

The bulletin is intended as a supplement to general or laboratory classes in statistics.

TIREY, RALPH N., and OTHERS. "The Laboratory School of the Indiana State Teachers College," *Journal of Indiana State Teachers College*, IX (Terre Haute: Indiana State Teachers College, November, 1937), 42 pp.

This issue is devoted to a description of the physical plant and its environment together with a statement of the philosophy of the program being carried on in the Laboratory School of the Indiana State Teachers College.

TRAXLER, ARTHUR E. "The Use of Tests and Rating Scales in the Appraisal of Personality," *Educational Records Bulletin*, No. 23 (New York: Educational Records Bureau, March, 1938), 80 pp.

Following a survey of procedures for appraising personality the author presents a selected and annotated list of personality tests and rating devices together with a summary of the validity, reliability and uses of results of these devices. Bibliography.

WICKMAN, E. K. *Teachers and Behavior Problems*, A digest of the book, *Children's Behavior and Teachers' Attitudes* (New York: The Commonwealth Fund, 1938), 40 pp.

This bulletin is a condensation of the book, *Children's Behavior and Teachers' Attitudes*, and discusses the topics: teachers' designations of undesirable behavior; teachers' reports on the behavior of pupils; how teachers distinguish the problem child; teachers' and mental hygienists' attitudes toward behavior problems; a psychological description of behavior problems; the significance of teachers' attitudes; re-education in attitudes.

WRIGHT, ROSCOE, and OTHERS "Research Work on Projects of the Works Progress Administration," *Bulletin of the Works Progress Administration* (Washington: United States Government Printing Office, 1938), 11 pp.

This bulletin presents a cross section of the research projects under the direction of the Works Progress Administration.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

HARVEY, O. L. "Enrolment Trends and Population Shifts," *Elementary School Journal*, XXXVIII (May, 1938), pp. 655-662.

On the basis of analysis of data regarding population shifts, school attendance laws, economic conditions and social attitudes, and administrative policies, the author concludes that elementary-school enrolments will rise slowly again, will be firm for a few years, and then turn to a decline.

CURRICULUM CONSTRUCTION

RUDISILL, MABEL. "Selection of Pre-Primers and Primers—A Vocabulary

Analysis. I," *Elementary School Journal*, XXXVIII (May, 1938), pp. 683-693.

The author reports an analysis of the vocabularies of twenty-six preprimers and seventeen primers for the purpose of determining: the preprimers which would prepare best for the reading of each of the primers analyzed; the primers for which most adequate preparatory materials are available in the form of preprimers; the best sequence for the reading of preprimers by children of different abilities; and the best sequence for the reading of primers by children of different abilities.

SNITZ, REUBEN H. "An Analysis of the Sheet-Metal Worker's Trade and a Curriculum for the Training of Teachers of Sheet-Metal Work in Industrial Arts Courses," *The Teachers College Journal*, IX (January, 1938), pp. 43-74.

On the basis of a job-analysis of the sheet-metal trade, the author develops a program for the training of teachers of sheet-metal work in industrial arts courses.

PSYCHOLOGY OF LEARNING AND TEACHING

KUNDE, LILLIAN ANNE. "Aesthetic Judgment of Seventh Grade Students of Line in Dress Costume Design," *Pittsburgh Schools*, XII (March-April, 1938), pp. 141-154.

The author conducted a control-group experiment to discover if there is any relationship existing between the age of the students, the sex of the students, or the method of teaching and good taste in costume design. Data seem to indicate that boys are more interested and have better taste in the judgment of costume than do girls.

SCHANE, EVELYN BESSIE. "Characteristic Errors in Common Fractions at Different Levels of Intelligence," *Pittsburgh Schools*, XII (March-April, 1938), p. 155-168.

On the basis of data gathered from an analysis of errors in pupils' work the author concludes that the chief difficulty for pupils in the subnormal group was the lack of knowledge as to how to begin the solutions.

THORNDIKE, EDWARD L. "Heredity and Environment," *Journal of Educational Psychology*, XXIX (March, 1938), pp. 161-166.

The author analyzes data from a previous study to measure the influence of the environment in cases which are important for theory and practice and concludes that the variations in the abilities studied are not in proportion to variations in the amount of school training.

WOODROW, HERBERT. "The Relation Between Abilities and Improvement with Practice," *The Journal of Educational Psychology*, XXIX (March, 1938), pp. 215-230.

The author studied data gathered from fifty-six subjects who completed thirty-nine days of practice in each of seven tests and interprets the marked changes in factor loadings occurring with practice as indicating that the quantitative patterns of abilities determining goodness of performance changes with practice.

PUPIL GUIDANCE, WELFARE AND DEVELOPMENT

BURKS, FRANCES W. "Some Factors Related to Social Success in College," *The Journal of Social Psychology*, IX (May, 1938), pp. 125-140.

On the basis of responses of twenty-six university students to a battery of tests involving social situations, personal interests, and an inventory of personal

characteristics, the author states nine general behavior characteristics which appear to facilitate successful social relations.

CROSBY, RICHARD C. "A Study of the Status of the Critic Teacher of Science in the Coöperating Public Secondary Schools of the Eastern United States," *Science Education*, XII (April, 1938), pp. 171-175.

The author makes a survey of the status of the critic teacher of science and finds that the critic is seldom well-trained and usually makes no adjustment in teaching load for supervisory work.

HILDRETH, GERTRUDE, and MARTENS, ELISE H. "Selected References from the Literature on Exceptional Children," *Elementary School Journal*, XXXVIII (May, 1938), pp. 694-708.

The authors present an extensive bibliography on subnormal and backward children, behavior problem cases, juvenile delinquency, superior and gifted children, blind and partially seeing children, crippled children, deaf and hard-of-hearing children, delicate children, speech defectives; and eight general references.

STATISTICS, MEASUREMENTS, AND SCIENTIFIC TECHNIQUES

ANDREW, DOROTHY M., and BIRD, CHARLES. "A Comparison of Two-New Type Questions: Recall and Recognition," *The Journal of Educational Psychology*, XXIX (March, 1938), pp. 175-193.

The authors studied the comparative reliability and relative difficulty of recognition and recall questions based on identical content, administered as an intrinsic part of college courses, and found that recall questions are more difficult and more reliable than are recognition questions.

TINKER, MILES A. "Motor Efficiency of the Eye as a Factor in Reading," *The Journal of Educational Psychology*, XXIX (March, 1938), pp. 167-174.

Data on accuracy of oculo-motor control in visual fixation as related to photographic measures of reading and speed of reading for sixty-four university sophomores did not show any significant correlation.

NEW TESTS

Telling What I Do, by Harry J. Baker. Bloomington: Public School Publishing Company, 1930.

The author presents a scale for measuring tendencies in behavior by sampling the behavior which is actually taking place in home, school, play, social, and ethical-moral situations. Primary and Advanced forms are available.

Burrett-Ryan-Schrammel English Test by E. R. Barrett, Teresa M. Ryan, and H. E. Schrammel. Yonkers-on-Hudson: World Book Company, 1938.

The test purposes to measure objectively student and class proficiency on the essential mechanics of English for purposes of diagnosis or survey. The authors report significant validity and reliability coefficients, and give norms for high-school and college students.

Aspects of Personality, by Rudolph Pintner, John J. Loftus, George Forlano, and Benjamin Alster. Yonkers-on-Hudson: World Book Company, 1937.

This test, which is suitable for grades four to nine inclusive, attempts to measure the ascendency-submission, the extroversion-introversion, and the emotional stability factors of personality. Reliability and validity coefficients; and norms for lower and upper grades are reported.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

SELECTED BIBLIOGRAPHY ON THE METHODOLOGY OF EDUCATIONAL RESEARCH AND RELATED PROBLEMS, 1937-1938

CARTER V. GOOD
University of Cincinnati

This is the ninth annual bibliography on the methodology or techniques of educational research to be published in the *Journal of Educational Research*. It covers approximately the period from July 1, 1937, to July 1, 1938. The earlier annual bibliographies may be found in the issues for October, 1930; September, 1931; October, 1932; September, 1933; September, 1934; October, 1935; September, 1936; and September, 1937.

Under the first heading, dealing with problems and trends, certain publications are unusual in scope and significance: social work in the depression (Chapin and Queen), trends in rural planning (Cole and Crowe), issues in higher education (W. S. Gray), and needed research in secondary education (Jessen).

As found in the second subdivision, the number of useful bibliographies, summaries, and guides is particularly impressive for the past year. In addition to the usual contributions of this character through the columns of the *Review of Educational Research*, *Psychological Bulletin*, *Elementary School Journal*, *School Review*, Office of Education bulletins, and similar sources, the following may be mentioned: American history (Beers), political science (Burchfield), tests (Buros), deliberative committees (Carr), modern language teaching (Coleman), historical bibliographies (Coulter and Gerstenfeld), motion pictures (Dale), doctoral dissertations (Gilchrist), exceptional children (Good), graduate theses (Ruth A. Gray), surveys of youth (Harley), courses of study (Leary), educational subject headings (Pettus), the President's Advisory Committee on Education (Reeves), government publications (Schmeckebier), Canadian education (A. H. Smith), foreign education (Smith and Painter), and periodical literature on testing (South).

The past year has been an active one in the production of books on research methods and techniques, as represented in the third section of the bibliography. Some of the publications lie in fields other than education, but have significance for workers who recognize the possibilities for educational research in its broader aspects. Among the more comprehensive volumes cited are those dealing with: scientific method (Dantzig, Freeman), historical and sociological techniques (Barnes, Barnes and Becker, Hutchinson, Lingelbach, Wilson), testing (Rinsland), examinations (Hartog and Roberts), guidance techniques (Paterson,

Schroeder, Strang, Williamson and Darley), psychological procedures (Louttit, Murphy, Spearman, Woodworth), statistics (Lindquist, Smith, Waugh, Wert), pictorial and graphic representation (Modley, Ridgway), preparation of reports and publication (Agg and Foster, Benbow, Binkley, Turabian).

Evaluative treatments of a variety of fields are listed under the fourth heading: progress in science and scientific method (Gray, Jastrow), elementary education (McGaughy, Wrightstone, Department of Elementary School Principals, Michigan Department of Public Instruction), research in social studies (National Council for the Social Studies), and technological trends (National Resources Committee).

Under the fifth subdivision of the bibliography, the volume by Ingles and McCague is a practical manual on the use of books and libraries which may prove of some service even in the training of graduate students.

I. Problems, Issues, and Trends: Needed Research

Alexander, Carter. "Needed Researches on the Library Knowledges and Skills Needed by Elementary-School Children for Different School Programs and for Outside Life," *Practical Values of Educational Research*, pp. 35-36. Washington: American Educational Research Association, 1938.

Anderson, H. A. "Recent Trends in Secondary School English," *Bulletin of the Department of Secondary Principals*, XXI (November, 1937), 8-13.

Ashley, L. F. "Opportunities for Historical Studies in Industrial Arts Education," *Industrial Arts and Vocational Education*, XXVI (September, 1937), 266-67.

Baker, F. E. "Major Issues in the Education of Teachers," *Childhood Education*, XIV (May, 1938), 389-93.

Barr, A. S. "Planning an Active School Year," *Journal of Educational Research*, XXI (September, 1937), 49-51. Urges that teachers become actively interested in studying the complex process of teaching and learning.

Bogardus, E. S. "Ten Group Work Problems," *Sociology and Social Research*, XXII (January-February, 1938), 273-80.

Briggs, T. H. "An Uncultivated Field," *North Central Association Quarterly*, XII (October, 1937), 214-20. Eleven suggestions for making the scientific study of education more effective.

Brown, Clara M. "Appraisal of Trends in Home Economics Education Research," *Journal of Home Economics*, XXIX (November, 1937), 603-6.

Brown, George A. "A Needed Investigation in the Field of Aptitudes," *Journal of Educational Research*, XXXI (February, 1938), 451-54.

Carmichael, O. C. "Some Issues in the Higher Learning," *Educational Record*, XIX (July, 1938), 323-31.

Chambers, M. M. "Issues in Educational Law," *Practical Values of Educational Research*, pp. 65-69. Washington: American Educational Research Association, 1938.

Chapin, F. S. "Some New Trends in Social Research—Some Hypotheses and Some Sociometric Scales," *Journal of Educational Sociology*, XI (May, 1938), 561-68.

Chapin, F. S., and Queen, S. A. *Research Memorandum on Social Work in the Depression*. New York: Social Science Research Council, 1937. Pp. xii + 134.

Cole, W. E., and Crowe, H. P. *Recent Trends in Rural Planning*. New York: Prentice-Hall, 1937. Pp. xvi + 579.

Cook, Katherine M. *Review of Conditions and Developments in Education in Rural and Other Sparsely Settled Areas.* Office of Education Bulletin No. 2, 1937. Washington: Office of Education, 1937. Pp. iv + 70.

Davis, J. W. *Problems in the Collegiate Education of Negroes.* Institute, West Virginia: West Virginia State College, 1937.

Dawson, H. A. "Pressing Problems in Financing Public Education in the Southern States," *Peabody Journal of Education,* XV (March, 1938), 233-41.

Dimock, H. S. "Some Issues for Religious Education Raised by Recent Character Research," *Religious Education,* XXXIII (April-June, 1938), 87-92.

Ellis, A. C. "Problems in Adult Education Needing Study," *School and Society,* XLVI (October 9, 1937), 449-57.

Engelhardt, N. L. "Modern Trends in School Planning as a Result of Changing Curriculums," *American School Board Journal,* XCVI (January, 1938), 23-24, 108.

Everts, E. W. "Health and Physical Education," in "Psychology and Methods in the High School and College," p. 41, *Review of Educational Research,* VIII (February, 1938). Needed research suggested.

Fausold, Samuel. "Some Problems Which Challenge American Educators," *School and Society,* XLIV (August 14, 1937), 193-200.

Frederick, O. I. "Research Technics and Problems Involved in Studying Areas of Human Activity," *Practical Values of Educational Research,* pp. 104-110. Washington: American Educational Research Association, 1938.

Gilland, Erna G. "Some Trends in the New Geographic Education," *Educational Method,* XVII (March, 1938), 262-69.

Gray, H. A. "Needed Research in the Field of Audio-Visual Learning Aids," *Practical Values of Educational Research,* pp. 72-77. Washington: American Educational Research Association, 1938.

Gray, W. S., Editor. *Current Issues in Higher Education.* Chicago: University of Chicago Press, 1937. Pp. viii + 153.

Greene, H. W. "Crucial Problems in the Higher Education of Negroes," *School and Society,* XLVI (August 21, 1937), 245-46.

Hendrickson, Gordon. "Needed Research in Music Education," *Journal of Educational Research,* XXXI (May, 1938), 672-77.

Holy, T. C. "Modern Trends in Heating and Ventilation," *Harvard Educational Review,* VII (May, 1937), 369-77.

Hughes, R. M. "Higher Education in 1980," *Journal of Higher Education,* IX (February, 1938), 77-83. Predicts secondary and college enrollments.

Jessen, C. A. *Needed Research in Secondary Education.* Office of Education Bulletin No. 28, 1937. Washington: Office of Education, 1938. Pp. 69. Based in large part on the findings of the National Survey of Secondary Education.

Judd, C. H. "Facing the Future," *Educational Record,* XIX (April, 1938), 125-40. Analyzes trends in terms of administrative units of the school system, vocational education and general education, equality of educational opportunity, and scientific study of educational problems.

Kilpatrick, W. H. "The Future of Education," *Journal of the National Education Association,* XXVI (November, 1937), 254-56.

Linder, I. H. "Twelve Basic Questions on Curriculum Construction," *Amer-*

ican School Board Journal, XCIV (March, 1938), 27-29.

Linton, Ralph. "The Present Status of Anthropology," *Science*, LXXXVII (March 18, 1938), 241-48.

Lomax, P. S. "Current Problems in Business Education," *Journal of Business Education*, XIII (November, 1937), 20-22, 24.

MacKinnon, D. W. "Trends in the Study of Personality," *Character and Personality*, VI (December, 1937), 150-55.

McClusky, F. D. "The Immediate Needs in Visual Education," *Educational Screen*, XVI (September, 1937), 213-15, 217.

Monroe, W. S. "Some Trends in Educational Measurement," *Twenty-fourth Annual Conference on Educational Measurements*, pp. 28-35. Bulletin of the School of Education, Indiana University, Vol. XIII, No. 4. Bloomington, Indiana, September, 1937.

Moore, J. E. "Art," in "Psychology and Methods in the High School and College," p. 1, *Review of Educational Research*, VIII (February, 1938). Needed research in art education.

Newlon, J. H. "What of Education in 1938?" *School Executive*, LVII (January, 1938), 198-99. The current situations, with some predictions.

Poffenberger, A. T. "Some Unsolved Problems in Human Adjustment," *Science*, LXXXVII (February 11, 1938), 124-29.

Reller, T. L. "One Hundred Years of the City Superintendency: Next Steps," *American School Board Journal*, XCVI (February, 1938), 27-30.

Reynolds, R. G. "Some Larger Tasks for Elementary Schools," *Teachers College Record*, XXXIX (February, 1938), 363-74.

Seates, D. E. "What Can Research Contribute to Our Understanding of the Physically Handicapped?" *Journal of Educational Research*, XXXI (September, 1937), 20-28.

Sexson, J. A. "Looking Ahead in Secondary Education," *Educational Record*, XIX (July, 1938), 346-62.

Simpson, A. D. "Summary and Forecast," in "Finance and Business Administration," *Review of Educational Research*, VIII (April, 1938), 187-89. Suggests needed research in finance and business administration.

Stretch, Lorena B. "Pressing Problems in Southern Public Education: In Instruction," *Peabody Journal of Education*, XV (March, 1938), 241-46.

Sturtevant, Sarah M. "Trends in Counseling Procedures," *Harvard Educational Review*, VIII (March, 1938), 198-204.

Tildsley, J. L. "Fifty Years of Secondary Education," *High Points*, XX (April, 1938), 5-17.

Townsend, M. E. "Emotions and Educational Personnel Problems," *Practical Values of Educational Research*, pp. 122-28. Washington: American Educational Research Association, 1938.

Turse, P. L. "Problems in Shorthand Prognosis," *Journal of Business Education*, XIII (May, 1938), 17-18, 20.

Werner, Heinz. "Process and Achievement—A Basic Problem of Education and Developmental Psychology," *Harvard Educational Review*, VII (May, 1937), 353-68.

Wesley, E. B. *Teaching the Social Studies*. Boston: D. C. Heath and Co., 1937. Pp. xviii + 635. Includes sections on methods of research, results of research, and needed investigations in the social studies fields.

Willing, M. H. "Curriculum Trends in Secondary Schools," *North Central Association Quarterly*, XII (April, 1938), 477-86.

Wrightstone, J. W. "Recent Trends in Social Studies Tests," *Social Education*, I (April, 1937), 246-50.

II. Sources of Information: Bibliographies, Summaries, and Abstracts

Abel, J. F. "Selected References on Foreign Education," *Elementary School Journal*, XXXVIII (June, 1938), 776-87.

Affleck, G. B. "Selected Bibliography for 1936 (Physical Education)," *Research Quarterly of the American Association for Health and Physical Education*, VIII (December, 1937), 122-52.

Anderson, I. H. "An Evaluation of Some Recent Research in the Psychology of Reading," *Harvard Educational Review*, VII (May, 1937), 330-39.

Bawden, W. T. "Review of Industrial Education for the Biennium, 1936-37," *Industrial Education Magazine*, XL (March, 1938), 49-62.

Beck, L. F. "A Review of Sixteen-Millimeter Films in Psychology and Allied Sciences," *Psychological Bulletin*, XXXV (March, 1938), 127-69. Covers 341 references.

Beers, H. P. *Bibliographies in American History:* Guide to Materials for Research. New York: H. W. Wilson Co., 1938. Pp. 339.

Brickman, W. W. "An Annotated Bibliography of the Use of Motion Pictures in Modern Foreign Language Instruction," *Modern Language Journal*, XXII (November, 1937), 132-40.

Brownell, W. A. "What Has Happened to Supervised Study?" *Educational Method*, XVII (May, 1938), 373-77. Based on an analysis of periodical literature.

Brueckner, L. J., and Others. "Selected References on Elementary School Instruction," *Elementary School Journal*, XXXVIII (September, October, November, 1937), 59-66, 131-46, 210-27.

Bruner, H. B., and Wieting, C. M. "Annual List of Outstanding Courses of Study," *Curriculum Journal*, VIII (December, 1937), 360-65.

Burchfield, Laverne. *Student's Guide to Materials in Political Science.* New York: Henry Holt and Co., 1935. Pp. 426.

Buros, Oscar K. *Educational, Psychological, and Personality Tests of 1936:* Including a Bibliography and Book Review Digest of Measurement Books and Monographs of 1933-36. New Brunswick, New Jersey: Rutgers University, 1937. Pp. 141.

Caliver, Ambrose, and Green, Ethel G. *Education of Negroes:* A Five-Year Bibliography, 1931-1935. Office of Education Bulletin No. 8, 1937. Washington: Office of Education, 1937. Pp. vi + 63.

Campbell, D. S. "Directory of the Junior College, 1938," *Junior College Journal*, VIII (January, 1938), 209-23.

Capron, Clara H. "Improving Instruction in Spelling: A Review of Recent Studies," *Elementary English Review*, XV (February, 1938), 43-51, 75.

Carr, W. G. "The Educational Policies Commission: Deliberative Committee Reports of 1937," *School and Society*, XLVII (February 26, 1937), 282-88.

Chambers, M. M. "The Purpose of Professional Associations Touching the Welfare of Youth," *School and Society*, XLVIII (July 2, 1938), 23-26.

Charters, W. W., and Others. "The Program for 1937-38," *Educational Research Bulletin*, XVI (November 10, 1937), 197-211, 224. Annual report on the work of the Bureau of Educational Research, Ohio State University.

Coleman, Algernon, Editor. *An Analytical Bibliography of Modern Language Teaching*, Vol. II, 1932-1937. Chicago:

University of Chicago Press, 1938. Pp. xviii + 561.

Coulter, Edith M., and Gerstenfeld, Melanie. *Historical Bibliographies.* Berkeley: University of California Press, 1935. Pp. 206.

Dale, Edgar, and Weedon, Vivian. "Annual Bibliography of Curriculum Making, 1936-37," *Curriculum Journal,* VIII (October, 1937), 249-63.

Dale, Edgar, and Others. *Motion Pictures in Education:* A Summary of the Literature. New York: H. W. Wilson Co., 1937. Pp. 472.

Doyle, H. G. "Doctors' Degrees in Modern Foreign Languages, 1931-32," *Modern Language Journal,* XXII (January, 1938), 297-300.

Doyle, H. G. "Doctors' Degrees in Modern Foreign Languages, 1933-34," *Modern Language Journal,* XXII (March, 1938), 456-59.

Doyle, H. G. "Doctors' Degrees in Modern Foreign Languages, 1936-37," *Modern Language Journal,* XXII (December, 1937), 215-20.

Duel, H. W. "Measurable Outcomes of Laboratory Work in Science: A Review of Experimental Investigations," *School Science and Mathematics,* XXXVII (October, 1937), 795-810.

Dunn, Fannie W., and Schneider, Etta. "The Literature in Visual Education: Its Strengths and Weaknesses," *Education,* LVIII (April, 1938), 454-59.

Dwyer, Justin. "Classified Abstracts Submitted by Graduate Students in the Department of Education of the University of Notre Dame Since the Establishment of the Department in 1918." Unpublished Doctor's thesis, University of Notre Dame, 1936.

Eells, W. C. "1938 as a Centennial Year in the History of Education," *School and Society,* XLVII (January 8, 1938), 50-52.

Eisenberg, Philip, and Lazarsfeld, P. F. "The Psychological Effects of Unemployment," *Psychological Bulletin,* XXXV (June, 1938), 358-90. Cover 112 references.

Eliassen, R. H., and Anderson, E. W. "Investigations of Teacher Supply and Demand Reported in 1937," *Educational Research Bulletin,* XVII (May 11, 1938), 132-36.

Fernberger, S. W. "Publications, Politics, and Economics," *Psychological Bulletin,* XXXV (February, 1938), 84-90. Based on an analysis of psychological titles appearing in different languages, as listed in the *Psychological Index.*

Freeman, F. N., and Others. "Selected References on Educational Psychology," *School Review,* XLVI (May, 1938), 381-86.

Gilchrist, Donald B. *Doctoral Dissertations Accepted by American Universities, 1936-1937,* No. 4. New York: H. W. Wilson Co., 1937. Pp. xviii + 105.

Goodenough, Florence L. "Selected References on Preschool and Parental Education," *Elementary School Journal,* XXXVIII (March, 1938), 539-45.

Goodykoontz, Bess. "A Bibliography of Unpublished Studies in Elementary School English, 1934-1936," *Elementary English Review,* XIV (November, December, 1937), 250-56, 266; 293-300.

Good, Carter V. "Selected Bibliography on the Methodology of Educational Research and Related Problems, 1926-1937," *Journal of Educational Research,* XXXI (September, 1937), 61-80.

Good, Carter V. "Doctors' Theses Under Way in Education, 1937-1938," *Journal of Educational Research,* XXXI (January, 1938), 377-400.

Good, Carter V., and Others. "Summary of Studies Relating to Exceptional Children," *Journal of Exceptional Children*, Extra Issue, (January, 1938), 1-60.

Good, Carter V. "Educational Progress During the Past Year, 1937," *School and Society*, XLVII (March 12, 1938), 345-52.

Good, Carter V. "Recent Theses and Dissertations in Educational Law," *Sixth Yearbook of School Law*, pp. 133-47. Edited by M. M. Chambers. Washington: American Council on Education, 1938. Pp. viii + 150.

Gray, Ruth A. *Bibliography of Research Studies in Education, 1935-1936*. Office of Education Bulletin No. 6, 1937. Washington: Office of Education, 1937. Pp. xiv + 338.

Gray, W. S. "Summary of Reading Investigations (July 1, 1936 to June 30, 1937)," *Journal of Educational Research*, XXI (February, 1938), 401-34.

Gray, W. S. "Selected References on Teacher Education," *Elementary School Journal*, XXXVIII (December, 1937), 296-305.

Grizzell, E. D. "The Coöperative Study of Secondary School Standards," *North Central Association Quarterly*, XII (July, 1937), 34-44.

Haggerty, M. E. *Studies in Higher Education:* Report of the Committee on Educational Research for the Quadrennium, 1932-1936. Bulletin of the University of Minnesota, Vol. XL, No. 38. Minneapolis: University of Minnesota, April, 1937.

Harley, D. L. *Surveys of Youth: Finding the Facts*. American Council on Education Studies, Series IV, American Youth Commission, Vol. I. No. 1. Washington: The Council, September, 1937. Pp. viii + 106. Classifies and describes recent surveys of youth.

Hawes, Marion E., and Steele, Rea J. "Sixty Educational Books of 1937," *Journal of the National Education Association*, XXXVII (April, 1938), 123-26.

Hayen, Mary A. "Survey of Masters' Theses in Elementary Education, 1928-36." Unpublished Master's thesis, George Peabody College for Teachers, 1936.

Henkle, H. H. "An Interpretation of Research Librarianship," *School and Society*, XLVII (April 16, 1938), 494-99.

Herriott, M. E. "Textbooks of 1937," *Curriculum Journal*, IX (January, 1938), 19-30.

Hildreth, Gertrude, and Martens, Elise H. "Selected References from the Literature on Exceptional Children," *Elementary School Journal*, XXXVIII (May, 1938), 694-708.

Hutson, P. W. "Selected References on Guidance," *School Review*, XLV (September, 1937), 540-46.

Kefauver, G. N., and Mackenzie, G. N. "Selected References on the Organization of Secondary Education," *School Review*, XLV (October, 1937), 621-26.

Kefauver, G. N., and Mackenzie, G. N. "Selected References on the Administration of Secondary Education," *School Review*, XLV (November, 1937), 702-8.

Knight, E. W. "Books on Education, 1937," *Social Education*, II (January, 1938), 35-43.

Knox, E. O. "The Negro as a Subject of University Research in 1937," *Journal of Negro Education*, VII (April, 1938), 172-79.

Knudsen, C. W., and Others. "Psychology and Methods in the High School and College," *Review of Educational Research*, VII (February, 1938), 1-102. Covers 617 references.

Koon, Beulah I., and Others. "Summary of Studies of Qualifications for Research Workers in Different Phases of Home Economics," *Journal of Home Economics*, XXXIX (November, 1937), 607-12.

Koos, L. V., and Others. "Selected References on Secondary-School Instruction," *School Review*, XLVI (January, February, March, 1938), 57-66, 131-47, 212-27.

Leary, Bernice E. *Classified List of Courses of Study, 1934-1937.* Office of Education Bulletin No. 31, Part IV, 1937. Washington: Office of Education, 1938. Pp. iv + 121.

Lundberg, G. A. "Report of Research Census of 1937 (Sociology)," *American Sociological Review*, II (August, 1937), 518-30.

McCutchen, S. P., and Others. "Eight-year Study, Progressive Education Association," *Social Education*, II (April, 1938), 229-60. Deals with social studies teaching in the coöperating secondary schools.

McDonald, Katherine S. "Ten Years of Published Research in Modern Foreign Language Periodicals." Unpublished Master's thesis, Ohio State University.

McLaughlin, Katherine L. "Selected References on Kindergarten-Primary Education," *Elementary School Journal*, XXXVIII (April, 1938), 619-26.

Metcalf, J. T. "Psychological Studies of Literary Form," *Psychological Bulletin*, XXXV (June, 1938), 337-57. Covers 71 references.

Miles, Dudley. "Research in the Teaching of English, 1935-37," *English Journal*, XXVII (June, 1938), 495-506.

Murra, W. F. "Research in the Teaching of the Social Studies," *Harvard Educational Review*, VII (May, 1937), 293-95. Based on trends in the literature.

Nauhaus, Ida P. "A Decade of Doctoral Research in Public School Personnel." Unpublished Master's thesis, University of Pittsburgh, 1936.

Parker, W. E. *Books about Jobs: A* Bibliography of Occupational Literature. Chicago: American Library Association, 1936. Pp. 402.

Pettus, Clyde. *Subject Headings in Education:* A Systematic List for Use in a Dictionary Catalogue. New York: H. W. Wilson Co., 1938. Pp. 188.

Phillips, Myrtle R., and Miller, Carroll L. "A Selected Annotated Bibliography on Relationship of the Federal Government to Negro Education," *Journal of Negro Education*, VII (July, 1938), 468-74.

Reavis, W. C., and Others. "School Organization," *Review of Educational Research*, VII (October, 1937), 357-446. Covers 481 references.

Reavis, W. C., and Henry, N. B. "Selected References on Public School Administration," *Elementary School Journal*, XXXVIII (February, 1938), 458-65.

Reeves, F. W., and Others. *The Advisory Committee on Education: Report of the Committee.* Washington: Government Printing Office, February, 1938. Pp. xii + 243.

Russell, J. D., and Hayes, Dorothy T. "Selected References on Higher Education," *School Review*, XLV (December, 1937), 781-88.

Schmeckebier, L. F. *Government Publications and Their Use.* Washington: Brookings Institution, 1936. Pp. 446.

Simpson, A. D., and Others. "Finance and Business Administration," *Review of Educational Research*, VIII (April, 1938), 103-210. Covers 480 references, and suggests needed research.

Smith, A. H., Editor. *A Bibliography of Canadian Education.* Bulletin No. 10

of the Department of Educational Research, University of Toronto. Toronto: University of Toronto, 1938. Pp. 302.

Smith, Dora V. "Research in the Teaching of English, 1934-37," *English Journal*, XXVII (May, 1938), 409-20.

Smith, Dora V. "The Contributions of Research to Teaching and Curriculum-Making in English, July, 1934, to July, 1937," *English Journal*, XXVII (April, 1938), 295-311.

Smith, H. L., and Painter, W. I. *Bibliography of Literature on Education in Countries Other Than the United States of America* (January 1, 1919, to December 31, 1924). Bulletin of the School of Education, Vol. XIV, No. 1. Bloomington: Indiana University, December, 1937. Pp. 139.

Smith, W. A. "A Review of the Literature on Evaluation," *California Journal of Secondary Education*, XIII (April, 1938), 219-22.

South, E. B. *An Index of Periodical Literature on Testing*. New York: Psychological Corporation, 1937. Pp. xii + 286. Covers 1921-1936.

Swineford, Frances, and Holzinger, K. J. "Selected References on Statistics, the Theory of Test Construction, and Factor Analysis," *School Review*, XLVI (June, 1938), 463-69.

Terry, P. W. "Selected References on the Extra-Curriculum," *School Review*, XLVI (April, 1938), 300-306.

Thompson, C. H. "Bibliography on Negro Education," *Journal of Negro Education*, VII (January, 1938), 81-89.

Walters, Raymond. "Statistics of Registration in American Universities and Colleges, 1937," *School and Society*, XLVI (December 18, 1937), 769-89.

Wheeler, J. L., and Hawes, Marion E. "Educational Books of 1937," *School and Society*, XLVII (April 2, 1938), 417-31. Lists 633 titles.

Wilson, L. R. "The Role of the Library in Higher Education," *School and Society*, XLVII (May 7, 1938), 585-92.

Wirth, Louis, and Shils, E. A. "The Literature of Sociology—1935 and 1936," *Social Education* I (October, November, 1937), 499-511, 575-85.

Witmer, Marion H., and Proffitt, M. M. *Guidance, Bibliography, 1936*. Office of Education Bulletin No. 36, 1937. Washington: Office of Education, 1937. Pp. vi + 65.

Young, Grace P. "Bibliography on Modern Foreign Language Methodology in the United States and Canada for 1937," *Modern Language Journal*, XXII (May, 1938), 629-37.

Youtz, Margaret. "The Technique of Summarization of the Known Facts and Principles Relating to Certain Pedagogical Issues." Unpublished Master's thesis, University of Michigan, 1935.

Zink, Norah E. "Aids from the Research Field," *Educational Method*, XVII (March, 1938), 301-5. Reviews studies on the teaching of geography.

A List of Masters and Abstracts of Their Theses, 1933-34 and 1934-35, Southern Methodist University. Dallas, Texas: Southern Methodist University, 1936. Pp. 98.

Abstracts of Dissertations: for the Degrees of Doctor of Philosophy and Doctor of Education with the Titles of Theses Accepted for the Degrees of Master of Laws, Engineer, Master of Education, and Master of Arts, 1935-36, Stanford University. Stanford University Bulletin, Vol. XI, Sixth Series, No. 36. Stanford, California: Stanford University, 1936. Pp. 227.

Abstracts of Dissertations Presented by Candidates for the Degree of Doctor of Philosophy, Ohio State University:

TIGHT BOUND

(November, 1937), 1-77.

"Bibliography" (Negro Education), *Journal of Negro Education*, VI (October, 1937), 655-60.

Dissertations Accepted for Higher Degrees in the Graduate School, Fordham University. New York City: Fordham University, 1936. Pp. 70.

Dissertations Accepted for Higher Degrees in the Graduate School, Fordham University, March, 1938. New York: Fordham University Press, 1938. Pp. 94.

Educational Policies Commission, *A National Organization for Education.* Washington: National Education As-

Selected References in Education, 1937. Supplementary Educational Monographs, No. 46. Chicago: Department of Education, University of Chicago, 1938. Pp. x + 224.

"Students Dissertations in Sociology," *American Journal of Sociology*, XLIII (September, 1937), 296-325. Graduate theses under way.

"Students Dissertations (Under Way) in Sociology," *American Journal of Sociology*, XLIV (July, 1938), 113-31.

Theses in Education: University of Kentucky. Bulletin of the Bureau of School Service, Vol. X, No. 1. Lexington: University of Kentucky, September, 1937. Pp. 32.

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ican Journal of Sociology, XLIII (September, 1937), 284-95.

Ashley, L. F. "Scientific Method and Historical Research." *Industrial Arts and Vocational Education*, XXVI (June, July, August, September, 1937), 173-75, 209-11, 235-36, 266-67.

Badger, W. V. "Why Use Source Materials in the Teaching of History?" *Social Studies*, XXIX (March, 1938), 117-19.

Barker, E. C. "The Changing View of the Function of History," *Social Studies*, XXIX (April, 1938), 149-54. Should not be propaganda for the maintenance of status quo or for establishment of Utopia.

205-8.

Butsch, R. L. C. "Why Statistics?" *Catholic School Journal*, XXXVIII (March, 1938), 59-61.

Cattell, R. B. "Measurement Versus Intuition in Applied Psychology," *Character and Personality*, VI (December, 1937), 114-31.

Cocking, Walter D. "Research Methods Employed by the Advisory Committee on Education," *Practical Values of Educational Research*, pp. 152-55. Washington: American Educational Research Association, 1938.

Courtis, S. A. "The Interpretation of Scores in Tests and Examinations,"

Spring Quarter, Summer Quarter, Autumn Quarter, 1935, and Winter Quarter, 1936. Abstracts of Doctors' Dissertations, Nos. 18, 19, 20. Columbus: Ohio State University, 1936. Pp. 410, 215, 170.

Abstracts of Theses, Regular Session, 1935-36, Summer Session, 1936, Louisiana State University. University Bulletin, Vol. XXVIII, No. 12. Baton Rouge: Louisiana State University, 1936. Pp. 130.

Abstracts of Theses and Reports for Higher Degrees, University of Colorado, 1936. University of Colorado Studies, Vol. XXIV, No. 1. Boulder: University of Colorado, 1936. Pp. 77.

Abstracts of Theses, Researches in Progress, and Bibliography of Publications, Vol. XII, University of Pittsburgh. University of Pittsburgh Bulletin, Vol. XXXIII, No. 1. Pittsburgh: University of Pittsburgh, 1936. Pp. 441.

"Abstracts of Unpublished Masters' Theses, Indiana State Teachers College, 1937," *Teachers College Journal,* VIII (July, 1937), 61-98.

"Annotated Bibliography of the First Fifteen Yearbooks of the Department of Elementary School Principals," *National Elementary Principal,* XVII (November, 1937), 1-77.

"Bibliography" (Negro Education), *Journal of Negro Education,* VI (October, 1937), 655-60.

Dissertations Accepted for Higher Degrees in the Graduate School, Fordham University. New York City: Fordham University, 1936. Pp. 70.

Dissertations Accepted for Higher Degrees in the Graduate School, Fordham University, March, 1938. New York: Fordham University Press, 1938. Pp. 94.

Educational Policies Commission, *A National Organization for Education.* Washington: National Education Association, March, 1937. Pp. 47. Purposes and activities of such an organization for the profession of teaching.

Educational Policies Commission, *National Deliberative Committees in Education: Reports Issued in* 1937. Washington: National Education Association, January, 1938. Pp. 67 (mimeographed).

"Graduate Research Studies in Education," *University of Kansas Bulletin of Education,* IV (March, 1938), 31-41. A complete list of theses in education at the University of Kansas.

"Higher Degrees in Sociology Conferred in 1936," *American Journal of Sociology,* XLIII (July, 1937), 105-21.

"Higher Degrees in Sociology Conferred in 1937," *American Journal of Sociology,* XLIV (July, 1938), 104-12.

List of Publications of the Office of Education, 1910-1936. Office of Education Bulletin No. 22, 1937. Washington: Office of Education, 1937. Pp. x + 158.

Programs Announcing Candidates for Higher Degrees, February, June, July, and August, 1936, University of Iowa. Series on Aims and Progress of Research, No. 50. Iowa City: University of Iowa, 1937.

Selected References in Education, 1937. Supplementary Educational Monographs, No. 46. Chicago: Department of Education, University of Chicago, 1938. Pp. x + 224.

"Students Dissertations in Sociology," *American Journal of Sociology,* XLIII (September, 1937), 296-325. Graduate theses under way.

"Students Dissertations (Under Way) in Sociology," *American Journal of Sociology,* XLIV (July, 1938), 113-31.

Theses in Education: University of Kentucky. Bulletin of the Bureau of School Service, Vol. X, No. 1. Lexington: University of Kentucky, September, 1937. Pp. 32.

Trends in Scholarship: Annotations of Theses and Dissertations Accepted by University of Southern California, 1910-35. University of Southern California Publications, University Chronicle Series, No. 4. Los Angeles: University of Southern California, 1935.

XIII. Collecting, Analyzing, Interpreting and Reporting Data

Agg, T. R., and Foster, W. L. *The Preparation of Engineering Reports.* New York: McGraw-Hill Book Co., 1935. Pp. 192.

Altstetter, M. L. "Research, Experimentation, and Improvement in Techniques on the Part of Teachers," *Peabody Journal of Education*, XV (January, 1938), 211-15. Suggests a scale for evaluating professional growth.

Altstetter, M. L. "Scales for the Evaluation of the Training of Teachers," *School Review*, XLV (September, 1937), 529-39.

Alvord, Wayne. "History Does Its Bit." *Social Studies*, XXIX (March, 1938), 105-6. Contribution of history.

Arrington, Ruth E. "An Important Implication of Time Sampling in Observational Studies of Behavior," *American Journal of Sociology*, XLIII (September, 1937), 284-95.

Ashley, L. F. "Scientific Method and Historical Research." *Industrial Arts and Vocational Education*, XXVI (June, July, August, September, 1937), 173-75, 209-11, 235-36, 266-67.

Badger, W. V. "Why Use Source Materials in the Teaching of History?" *Social Studies*, XXIX (March, 1938), 117-19.

Barker, E. C. "The Changing View of the Function of History," *Social Studies*, XXIX (April, 1938), 149-54. Should not be propaganda for the maintenance of status quo or for establishment of Utopia.

Barnes, H. E. *A History of Historical Writing.* Norman: University of Oklahoma Press, 1937. Pp. xiii + 434.

Barnes, H. E., and Becker, Howard. *Social Thought from Lore to Science.* 2 vols. Boston: D. C. Heath and Co., 1938. Pp. xxiv, lxxxiv + 790; viii, lxxxvii + 388.

Beard, C. A. "Currents in Historiography," *American Historical Review*, XLII (April, 1937), 460-84.

Benbow, John. *Manuscript and Proofs.* New York: Oxford University Press, 1937. Pp. 118.

Binkley, R. C. *Manual on Methods of Reproducing Research Materials.* Ann Arbor, Michigan: Edwards Bros., 1936. Pp. 207.

Bowers, R. V. "Conceptual Integration and Social Research," *American Sociological Review*, III (June, 1938), 307-19.

Breed, F. S. "Fundamental Assumptions in Educational Measurement," *Phi Delta Kappa*, XX (December, 1937), 118-20, 123.

Brown, Marion, and Martin, Vibella. "Anecdotal Records of Pupil Behavior," *California Journal of Secondary Education*, XIII (April, 1938), 205-8.

Butsch, R. L. C. "Why Statistics?" *Catholic School Journal*, XXXVIII (March, 1938), 59-61.

Cattell, R. B. "Measurement Versus Intuition in Applied Psychology," *Character and Personality*, VI (December, 1937), 114-31.

Cocking, Walter D. "Research Methods Employed by the Advisory Committee on Education," *Practical Values of Educational Research*, pp. 152-55. Washington: American Educational Research Association, 1938.

Courtis, S. A. "The Interpretation of Scores in Tests and Examinations,"

Journal of Educational Research, XXXI (May, 1938), 637-49.

Crane, E. J. "Words and Sentences in Science and Industry," *Science*, LXXXVI (December 17, 1937), 549-53. On terminology and good usage in writing.

Dantzig, T. *Aspects of Science*. New York: Macmillan Co., 1937. Pp. xi + 285.

Dewey, John. "The Relation of Science and Philosophy as the Basis of Education," *School and Society*, XLVII (April 9, 1938), 470-73.

Ebel, R. L. "What Is the Scientific Attitude?" *Science Education*, XXII (January, 1938), 1-5.

Eells, K. W., and Others. "Important Factors in Measuring a Secondary School," *Practical Values of Educational Research*, pp. 130-47. Washington: American Educational Research Association, 1938.

Eells, W. C. "Comparison of Scales for Evaluation of Periodicals," *Journal of Educational Psychology*, XXVIII (November, 1937), 637-40.

English, H. B. "On Citations to Scientific Literature," *Psychological Bulletin*, XXXV (May, 1938), 305-6. A criticism of careless practices.

Fenlason, Anne F., and Huff, Mary L. "The Follow-up: The Client's Own Story of Social Case Treatment," *Social Forces*, XVI (March, 1938), 372-80.

Fenlason, Anne F., and Others. "Some Concepts of Social Case Work," *Social Forces*, XVI (October, 1937), 75-83.

Fraser, Mowat G. "New Methods Needed for Studying the Significance of Trends," *Practical Values of Educational Research*, pp. 56-60. Washington: American Educational Research Association, 1938.

Freeman, F. N. "The Yearbook on the Scientific Movement in Education," *School and Society*, XLVII (April 1938), 457-61. Yearbook of the National Society for the Study of Education.

Freeman, F. N., and Others. *The Scientific Movement in Education*. Thirty-seventh Yearbook of the National Society for the Study of Education, Part II. Bloomington, Illinois: Public School Publishing Co., 1938. Pp. xii + 495.

Fristoe, Dewey. "Case Study Techniques Organized and Applied to Student Teaching," *Educational Administration and Supervision*, XXIII (May 1937), 393-95.

Frutchey, F. P. "A Coöperative Program for Developing Tests of the Ability to Use Scientific Method in College Sciences," *Science Education*, XXII (February, 1938), 81-85.

Good, Carter V. "Fundamentals of Research — Methodology," *Journal of Educational Research*, XXXI (October 1937), 138-39.

Good, Carter V. "Toward a More Exact Terminology," *Journal of Educational Research*, XXXI (November, 1937), 214-15.

Hall, M. C. "Some Aspects of the Life of a Scientist," *Scientific Monthly*, XLVI (February, 1938), 141-45. Some of the limiting conditions which interfere with the work of the scientist.

Harris, P. E. *The Curriculum and Cultural Change*. New York: D. Appleton-Century Co., 1937. Pp. xx + 502. Chapter VI deals with the scientific method and the curriculum.

Hartog, Philip, and Roberts, Gladys. *A Conspectus of Examinations in Great Britain and Northern Ireland*. London: Macmillan Co., 1938. Pp. xiv + 182.

Hulett, J. E. "Interviewing in Social Research: Basic Problems of the First

Field Trip," *Social Forces*, XVI (March, 1938), 358-66.

Hutchinson, W. T., and Others. *Marcus W. Jernegan Essays in American Historiography*. Chicago: University of Chicago Press, 1937. Pp. x + 417.

Jones, H. E. "The California Adolescent Growth Study," *Journal of Educational Research*, XXXI (April, 1938), 561-67. Describes the policies and procedures employed.

Kallen, H. M. "Freedom and Scientific Method," *Social Frontier*, IV (October, 1937), 17-19.

Kaufman, Abraham. "Literature as the Guide to History," *Social Studies*, XXIX (March, 1938), 99-105.

Lindquist, E. F. *A First Course in Statistics*: Their Use and Interpretation in Education and Psychology. Boston: Houghton Mifflin Co., 1938. Pp. xiv + 226.

Lingelbach, W. E. *Approaches to American Social History*. New York: D. Appleton-Century Co., 1937. Pp. viii + 101.

Link, H. C. "How Many Interviews Are Necessary for Results of a Certain Accuracy?" *Journal of Applied Psychology*, XXI (February, 1937), 1-17.

Louttit, C. M. *Clinical Psychology*: A Handbook of Children's Behavior Problems. New York: Harper and Bros., 1936. Pp. xx + 695. Deals with methods of diagnosis and presents illustrative cases.

McConn, Max. "Putting the Tests to Work," *Educational Record*, XIX, Supplement No. 11 (January, 1938), 56-73. Development and program of the Educational Records Bureau.

McCormick, T. C. "On the Amount of Error in Sociological Data," *American Sociological Review*, III (June, 1938), 328-32.

McCormick, T. C. "Sampling Theory in Sociological Research," *Social Forces*, XVI (October, 1937), 67-74.

Modley, Rudolf, and Hess, F. C. *How to Use Pictorial Statistics*. New York: Harper and Brothers, 1937. Pp. 170.

Monroe, Marion. "Diagnostic and Remedial Procedures in Reading," *Educational Record*, XIX, Supplement No. 11 (January, 1938), 105-13.

Mosier, C. I. "On the Validity of Neurotic Questionnaires," *Journal of Social Psychology*, IX (February, 1938), 3-16.

Mowrer, E. R. "The Isometric Map as a Technique of Social Research," *American Journal of Sociology*, XLIV (July, 1938), 86-96.

Murphy, Gardner, and Others. *Experimental Social Psychology*. Revised Edition. New York: Harper and Bros., 1937. Pp. xi + 1121.

Neely, Twila E. *A Study of Error in the Interview*. Sewickley, Penna.: The Author, 1938. Pp. 151.

Panunzio, Constantine M. *A Student's Dictionary of Sociological Terms*. Berkeley: University of California Press, 1937. Pp. 49.

Parsons, Talcott. "The Role of Theory in Social Research," *American Sociological Review*, III (February, 1938), 13-20.

Paterson, D. G., and Others. *Student Guidance Techniques*. New York: McGraw-Hill Book Co., 1938. Pp. xviii + 316.

Preston, M. G. "Psychophysical Measurement Methods," *Psychological Bulletin*, XXXV (February, 1938), 63-83. Reviews 79 studies.

Raths, Louis E. "Techniques for Test Construction," *Educational Research Bulletin*, XVII (April 13, 1938), 85-114. Measuring the ability to apply scientific principles and the interpretation of data, and evaluating some aspects of proof.

Raths, Louis E. "Evaluating the Program of a School," *Educational Research Bulletin*, XVII (March 16, 1938), 57-84. Describes the testing procedures and instruments used in one of the secondary schools coöperating in the eight-year study of the Progressive Education Association.

Ridgway, J. L. *Scientific Illustration.* Stanford, California: Stanford University Press, 1938. Pp. xiv + 173. Principles and practices in selection, preparation, and reproduction of illustrative and graphic materials.

Rinsland, H. D. *Constructing Tests and Grading in Elementary and High School Subjects.* New York: Prentice-Hall, 1937. Pp. xvi + 323.

Russo, Salvatore. "A Philosophical classification of Historiography," *Social Studies*, XXVIII (December, 1937), 355-58.

Scates, Douglas E. "Fact-Finding and Research in Industry and Public Education," *Elementary School Journal*, XXXVIII (June, 1938), 735-46.

Scates, Douglas E., and Fauntleroy, Virginia. "The Effect of Weights on Certain Index Numbers," *Journal of Experimental Education*, VI (March, 1938), 282-306.

Schroeder, P. L., and Others. *Child Guidance Procedures:* Methods and Techniques Employed at the Institute for Juvenile Research. New York: D. Appleton-Century Co., 1937. Pp. 358.

Smith, G .M. *A Simplified Guide to Statistics for Students of Psychology and Education.* New York: Farrar and Rinehart, 1938. Pp. viii + 70.

Spearman, C. *Psychology Down the Ages.* New York: Macmillan Co., 1938. Pp. xviii + 809. 2 vols. Advances of 3000 years.

Stenquist, J. L. "Devices for Testing," *Nation's Schools*, XX (November, 1937), 30-33.

Stenquist, J. L. "Fifteen Years of Testing," *Baltimore Bulletin of Education*, XVI (March-April, 1938), 1-11.

Stenquist, J. L. "Research and Experiment in Public Education," *Baltimore Bulletin of Education*, XV (September-October, 1937), 41-46.

Strang, Ruth. *Counseling Technics in College and Secondary School.* New York: Harper and Bros., 1937. Pp. xii + 160. Personnel records, case study, interview, observation, rating scales, autobiographical procedures, and needed research.

Symonds, P. M. "Securing Rapport in Interviewing," *Teachers College Record*, XXXIX (May, 1938), 707-22.

Tiegs, E. W., and Others. "Measurement," *Education*, LVIII (May, 1938), 513-59. A symposium on testing and measurement.

Toops, H. A. "The Factor of Mechanical Arrangement and Typography in Questionnaires," *Journal of Applied Psychology*, XXI (April, 1937), 225-29.

Turabian, Kate L. *A Manual for Writers of Dissertations.* Chicago: University of Chicago Bookstore, 1937. Pp. vi + 61.

Vincent, J. M. *Aids to Historical Research.* New York: D. Appleton-Century Co., 1935. Pp. vii + 173.

Walker, K. P. "Examining Personal Information Items of a Questionnaire Study," *Journal of Educational Research*, XXXI (December, 1937), 281-82.

Waugh, A. E. *Elements of Statistical Method.* New York: McGraw-Hill Book Co., 1938. Pp. xv + 381.

Weiss, Anni B. "Diagnostic Methods in Child Guidance and Psychological Counseling," *Mental Hygiene*, XXI (October, 1937), 579-98.

Wert, J. E. *Educational Statistics.* New

York: McGraw-Hill Book Co., 1938. Pp. xi + 305.

Williamson, E. G., and Darley, J. G. *Student Personnel Work.* New York: McGraw-Hill Book Co., 1937. Pp. 306.

Wilson, R. S. *The Short Contact in Social Case Work,* Vols. I, II. New York: National Association for Travelers Aid and Transient Service, 1937. Pp. 201, 219.

Woodworth, R. S. *Experimental Psychology.* New York: Henry Holt, 1938.

Woody, Clifford. "The Forgotten Variables in Research," *Journal of Educational Research,* XXXI (December, 1937), 289-91.

A Manual of Style. Tenth Edition. Chicago: University of Chicago Press, 1937. Pp. x + 394.

Manual on Research and Reports. New York: McGraw-Hill Book Co., 1937. Pp. x + 140.

IV. Evaluation of Research and Educational Procedure

Becker, Elsa G. "How Shall Guidance Be Evaluated?" *High Points,* XIX (September, 1937), 5-10.

Birge, E. B. "Public School Music, 1838-1938," *Music Educators Journal,* XXIV (February, 1938), 13-14.

Brownell, W. A. "A Critique of the Committee of Seven's Investigations on the Grade Placement of Arithmetic Topics," *Elementary School Journal,* XXXVIII (March, 1938), 495-508.

Bruner, H. B. "Criteria for Evaluating Course-of-Study Materials," *Teachers College Record,* XXXIX (November, 1937), 107-20.

Buckingham, B. R. "Educational Research in Perspective," *School and Society,* XLVII (April 9, 1938), 466-70. Reports trends and progress since 1919.

Carlson, G. E. "Social Work as an Instrument of Social Change," *Sociology and Social Research,* XXII (March-April, 1938), 319-24.

Cattell, J. M. "Science and Democracy," *Scientific Monthly,* XLVI (January, 1938), 80-88. A statement of the dependence of modern civilization on the applications of science.

Clem, Orlie M. "Utilizing the Fruits of Research in Reorganizing a Small High School," *Practical Values of Educational Research,* pp. 97-102. Washington: American Educational Research Association, 1938.

Cohn, A. E. "The Meaning of Medical Research," *Scientific Monthly,* XLVI (June, 1938), 508-25.

Conklin, E. G. "Science and Ethics," *Science,* LXXXVI (December 31, 1937), 595-603.

Ebel, R. L. "What Is the Scientific Attitude?" *Science Education,* XXII (February, 1938), 75-81.

Eginton, D. P. "Criteria for Making Educational Changes," *American School Board Journal,* XCVI (March, 1938), 19-21.

Eubank, E. E. "Errors of Sociology," *Social Forces,* XVI (December, 1937), 178-201.

Eurich, A. C. "Research That Improves Instruction," *Harvard Educational Review,* VII (March, 1937), 176-83.

Farris, Ellsworth. "The Promise of Sociology," *American Sociological Review,* III (February, 1938), 1-12.

Finch, J. K. "Research and Engineering Education," *Journal of Engineering Education,* XXVIII (May, 1938), 643-47.

Freeman, F. S. "Science in Education," *Harvard Educational Review,* VII (October, 1937), 515-22 Evaluation of the contributions made, especially in educational psychology.

Fries, H. S. "Social Science and Human Values," *Journal of Social Philosophy,* III (October, 1937), 54-58.

Good, Carter V. "A Year of Accomplishment through Coöperation and Coördination," *Journal of Educational Research*, XXXI (January, 1938), 363-65. Reviews briefly the major coöperative studies and reports of commissions during 1937.

Gray, G. W. *The Advancing Front of Science.* New York: McGraw-Hill Book Co., 1937. Pp. 364. Based on interviews with more than 80 scientists.

Hamilton, T. T. "Principles Derived from Educational Research as a Basis for the Selection of Learning Exercises." Unpublished Doctor's thesis, University of Illinois, 1936.

Holmes, H. W. "Whither Research in Education?" *Educational Record*, XIX (April, 1938), 202-8. Progress report of an attempt to determine the direction of research in five fields: reading, psychological testing, child development, personality adjustment and guidance, and school finance.

Jastrow, Joseph, and Others. *The Story of Human Error.* New York: D. Appleton-Century Co., 1936. Pp. xvii + 445.

Kitson, H. D. "A Year's Progress in Vocational Guidance," *Teachers College Record*, XXXIX (February, 1938), 389-99.

Landis, P. H. "The Development of Rural Sociology in the United States," *Sociology and Social Research*, XXII (March-April, 1938), 329-35.

Langmuir, Irving. "Fundamental Research and Its Human Value," *Scientific Monthly*, XLVI (April, 1938), 358-65. Illustrations from industrial research.

Larson, Henrietta M. "The Implications for Education of Research in Business," *Harvard Educational Review*, VII (October, 1937), 502-14.

Leonard, J. P. "The Effect of Recent Research Upon the Selection and Placement of Items of Grammar in the Secondary School Curriculum," *Journal of Educational Research*, XXXI (April, 1938), 599-607.

Lilge, Fritz. "Science and Education in National Socialist Germany," *Harvard Educational Review*, VII (May, 1937), 391-403.

Loveridge, Arthur. "If the Blind Lead the Blind?" *Scientific Monthly*, XLVI (January, 1938), 16-24. A sharp criticism of the misstatements and inaccuracies found in a purportedly scientific book.

Mayer, Joseph. "Why the Social Sciences Lag Behind the Physical and Biological Sciences," *Scientific Monthly*, XLVI (June, 1938), 564-65.

Maynard, D. M. "Social Research as a Basis for Federal Work Projects," *Sociology and Social Research*, XXII (March-April, 1938), 325-28.

McGaughy, J. R. *An Evaluation of the Elementary School:* With a Forecast of Its Future. Indianapolis, Indiana: Bobbs-Merrill Co., 1937. Pp. viii + 422.

Monroe, Paul. "The Scientific Movement in Education in Foreign Countries," *School and Society*, XLVII (April 9, 1938), 461-66.

Monroe, Walter S. "Evaluation and Interpretation of Educational Research," *Practical Values of Educational Research*, pp. 190-94. Washington: American Educational Research Association, 1938.

Monroe, W. S. "Progress toward a Science of Education," *Twenty-fourth Annual Conference on Educational Measurements*, pp. 43-51. Bulletin of the School of Education, Indiana University, Vol. XIII, No. 4. Bloomington, Indiana, September, 1937.

Mort, P. R., and Cornell, F. G. *A Guide for Self-Appraisal of School Systems.* New York: Teachers College, Columbia University, 1937. Pp. vi + 66.

Moulton, H. G. "Science and Society," *Science*, LXXXVII (February 25, 1938), 173-79.

Noffsinger, F. R. "A Century of Progress in Schoolroom Lighting," *American School Board Journal*, XCVI (April, 1938), 41-42, 89.

Noffsinger, F. R. "A Century of Progress in Schoolroom Planning," *American School Board Journal*, XCV (September, October, November, 1937), 47-48, 39-40, 29-30.

Odum, H. W. "The Errors of Sociology," *Social Forces*, XV (March, 1937), 327-42.

O'Toole, G. B. "Closing of the Rift Between Science and Religion," *Catholic Educational Review*, XXXVI (March, 1938), 129-46.

Scates, D. E., and Hoban, C. F., Jr. "Critical Questions for the Evaluation of Research," *Journal of Educational Research*, XXXI (December, 1937), 241-54.

Seelig, M. G. "Medical Progress in the Last Hundred Years," *Science*, LXXXVI (September 24, 1937), 275-79.

Smick, A. A. "Social Research: An Arm of Government," *Sociology and Social Research*, XXII (March-April, 1938), 336-39.

Spaulding, F. T. "The Evaluation of Secondary-School Curricula in the New York State Regents' Inquiry," *North Central Association Quarterly*, XII (July, 1937), 26-33.

Thomson, J. Arthur. *The Outline of Science*. New York: Putnam's 1922, 1937 (reprint). Pp. lxii + 1220. Attempts to combine simplicity with completeness in giving a non-technical picture of the history and facts of scientific discovery in all fields.

Ulich, Robert. *On the Reform of Educational Research*. Occasional Pamphlets of the Graduate School of Education, Harvard University, No. 2. Cambridge, Mass.: Harvard University, 1937. Pp. 26.

Wakeham, G. "Time for 'Education' to Clean House," *School and Society*, XLVII (January 1, 1938), 20-23.

Ward, J. L. "Promotional Factors in College Teaching," *Journal of Higher Education*, VIII (December, 1937), 475-79. Criteria for evaluating the faculty personnel.

Webb, L. W. "Ten Years of Curriculum Planning by the North Central Association," *Curriculum Journal*, VIII (October, 1937), 234-38.

Wood, H. B. "Planning a Program of Evaluation," *Curriculum Journal*, VIII (December, 1937), 355-59. Principles and steps in evaluating the program of a school system.

Wrightstone, J. W. *Appraisal of Newer Elementary School Practices*. New York: Teachers College, Columbia University, 1938.

Appraising the Elementary School Program. Sixteenth Yearbook of the Department of Elementary School Principals. Washington: The Department, July, 1937. Pp. 227-655. Chapter X deals with the techniques of appraisal.

"Evaluation in Secondary Schools—A Symposium," *California Journal of Secondary Education*, XIII (April, 1938), 201-22.

National Council for the Social Studies, *The Contribution of Research to the Teaching of the Social Studies*. Eighth Yearbook. Cambridge, Mass.: The Council, 1937. Pp. 239.

National Resources Committee. *Technological Trends and National Policy*. House Document No. 360. Washington: Government Printing Office, June, 1937. Pp. x + 388.

Practical Values of Educational Research. Official Report, American Educational

Research Association, 1938. Washington: The Association, 1938. Pp. 216.

What Does Research Say? A Statement of the Implications of Educational Research for Teaching in the Elementary School. Bulletin No. 308. Lansing, Michigan: State Department of Public Instruction, 1937. Pp. 146.

V. Training and Guidance of Research Workers and Graduate Students

Alexander, Carter. "Getting under Way in Coöperative Research," *Industrial Education Magazine*, XL (May, 1938), 116-21.

Alexander, Carter. "Library Aladdin Lamps for Schoolmen," *School Executive*, LVII (October, 1937), 62-63, 90. Emphasizes the value of knowing library usage.

Almack, J. C. "The Method of Applied Science in Teaching and Administration," *School and Society*, XLVII (February 12, 1938), 193-97.

Barr, A. S. "Educational Research and the Field Worker," *Journal of Educational Research*, XXXI (September, 1937), 1-8.

Barr, A. S. "What Should Teachers Know About Statistics, Measurements, and Scientific Techniques?" *Journal of Educational Research*, XXXI (April, 1938), 616-18.

Berl, E. "Scientific and Technical Achievement," *Journal of Chemical Education*, XIV (November, 1937), 528-33. Characteristics of scientists and of scientific procedure

Britt, S. H. "Social Psychologists or Psychological Sociologists — Which?" *Journal of Abnormal and Social Psychology*, XXXII (October-December, 1937), 314-18; *American Sociological Review*, II (December, 1937), 898-902. Based on an analysis of the membership of the psychological and sociological societies.

Coquillette, L. W. "The Myth of t Ph.D.," *American School Board Jou nal*, XCVII (July, 1938), 66, 68.

Danton, J. P. "The Selection of Boo for College Libraries: An Examin tion of Certain Factors Which Affe Excellence of Selection." Unpublish Doctor's thesis, University of Chica 1935.

Edwards, Marcia. "Products and P Products of an Accreditation Study," *School and Society*, XLVII (Janua 15, 1938), 90-94. Deals with gradua work.

Eells, W. C. "Another Ranking of Gra uate Schools," *School and Socie* XLVI (August 28, 1937), 282-8 Based on 28 criteria.

Fernberger, S. W. "The Scientific In terests and Scientific Publications o the Members of the American Psych logical Association," *Psychologic Bulletin*, XXXV (May, 1938), 261-8

Gohdes, Clarence. "A Utopian Doctor Thesis in English: An Outline," *Eng lish Journal* (College Edition), XXV (March, 1938), 262-65.

Good, Carter V. "Graduate Study an Problem Solving," *Open Book Mag azine of Kappa Phi Kappa*, XVI (May 1938), 3-8.

Granbery, J. C. "The Ph.D. Super stition," *Journal of the National Edu cation Association*, XXVI (Decembe 1937), 305. Emphasizes that there ar other important qualifications in selec ing teachers.

Hankammer, O. A. "Graduate Program in Industrial Arts Education, wit Special Reference to the Master's De gree." Unpublished Doctor's thesis Ohio State University, 1937.

Henkle, H. H. "An Interpretation o Research Librarianship," *School an Society*, XLVII (April 16, 1938), 494 99.

Hill, G. E. "Improving Ability in the Mathematical Concepts of Educational Statistics," *Journal of Educational Psychology*, XXVIII (September, 1937), 461-64.

Holmes, D. O. W. "The Future Possibilities of Graduate Work in Negro Colleges and Universities," *Journal of Negro Education*, VII (January, 1938), 5-11.

Holmes, H. W. *Shall Teachers Be Scholars?* Occasional Pamphlets of the Graduate School of Education, Harvard University, No. 1. Cambridge, Mass.: Harvard University, 1937. Pp. 28.

Hunt, E. M. "The Spirit and Letter of Scholarship," *Social Education*, I (May, 1937), 324-28. Urges emphasis on genuine scholarship in college teaching of social studies rather than mere information.

Ingles, May, and McCague, Anna C. *Teaching the Use of Books and Libraries:* A Manual for Teachers and Librarians. Revised Edition. New York: H. W. Wilson Co., 1937. Pp. 207.

Jasper, J. J. "And So You Want to Be a Chemist," *Journal of Chemical Education*, XIV (November, 1937), 517-19. Stresses need for good teaching of chemistry in college and understanding of problems of society and industry rather than to place exclusive emphasis on research.

Jessen, C. A. "Need for Coöperation in Research in Secondary Education," *Education for Dynamic Citizenship*, pp. 169-77. Twenty-fourth Annual Schoolmen's Week Proceedings. Philadelphia: University of Pennsylvania, 1937.

Kunkel, B. W. "A Survey of College Faculties," *Bulletin of the Association of American Colleges*, XXIII (December, 1937), 465-514. Includes an analysis of the writing done by faculty members.

Kunkel, B. W. "A Survey of College Teachers," *Bulletin of the American Association of University Professors*, XXIV (March, 1938), 249-62.

Linton, Clarence, and Katsuranis, J. J. "A Study of Alumni of Teachers College (Columbia) Receiving Degrees from 1928-1935," *Teachers College Record*, XXXIX (February, May, 1938), 407-22, 734-46. Includes those with Masters' degrees.

Maberry, A. L. "The School Administrators and Library Instruction," *American School Board Journal*, XCV (October, 1937), 46. Indicates need for training teachers and pupils in adequate library usage.

McGregor, Douglas. "Should There Be Academic Prerequisites for Graduate Work in Psychology?" *Psychological Bulletin*, XXXIV (October, 1937), 501-9.

Norris, J. Anna, and Sweet, Dorothy C. "A Survey to Determine the Status of Graduate Work in Physical Education," *Research Quarterly of the American Association for Health and Physical Education*, VIII (December, 1937), 3-10.

Oak, V. V. "Some Outstanding Defects in Institutions of Higher Learning for Negroes," *School and Society*, XLVI (September 18, 1937), 357-62.

Ogden, R. M. "The Teaching of Science," *School and Society*, XLVII (June 4, 1938), 713-19.

Reddick, L. D. "Research Barriers in the South," *Social Frontier*, IV (December, 1937), 85-86. Based on Gee's *Research Barriers in the South.*

Seates, Douglas E. "Public-School Directors of Research Look at Their Positions," *Educational Research Bulletin*, XVII (May 11, 1938), 115-31.

Shannon, J. R. "Geographical Distribution of America's Notables in Education," *School and Society*, XLVI (November 6, 1937), 606-8. Based on *Who's Who in America*.

Shannon, J. R. "The Relative Prominence of University Professors in Various Fields of Learning," *Phi Delta Kappan*, XX (October, 1937), 50-52. Based on data in *Who's Who in America*.

Sharpe, P. B. "Why Not Teach the Scientific Method?" *Science Education*, XXI (December, 1937), 235-40. Applied primarily at the secondary level.

Smith, Mapheus. "The General Formal Education of Eminent Men," *Scientific Monthly*, XLVI (June, 1938), 551-60.

Stouffer, E. B. "Conditions Surrounding the Offering of the Master's Degree," *North Central Association Quarterly*, XII (October, 1937), 205-13.

Tarkington, R. N. "Characteristics of Graduate and Undergraduate Work in Business Education," *Journal of Business Education*, XIII (January, 1938), 15.

Trow, W. C. "The Degree of Doctor of Education at the University of Michigan," *University of Michigan School of Education Bulletin*, II (April, 1938), 107-9.

Wert, J. E. "The Function of Graduate Education in a Teachers College," *Educational Research Bulletin*, XVII (February 16, 1938), 29-35, 56.

Witsky, Jonas. "The Organization and Functions of City School Research Bureaus," *American School Board Journal*, XCVI (April, 1938), 25-27, 89.

"How Much Do Faculty Members Read?" *Journal of Higher Education*, IX (May, 1938), 243-47.

"Master of Arts in Education," *Clearing House*, XII (April, 1938), 495-96. A suggested graduate program for elementary teachers.